The BUILDER

Robert Hooke, Architect.

ROBERT HOOKE assisted at the birth of Science in England, and initiated inventions that are still unsuperseded. He is allowed, by all who are capable of giving an opinion, to have been the greatest philosophical mechanic that ever lived, yet his name is only known to the few, and by the many who are advantaged by his inventions he is almost totally disregarded. We are indebted to him for indispensable instruments in nearly every branch of science, but some of his inventions have been re-discovered by other men, and have since received their names. He gave accuracy to the art of watchmaking by inventing the balance spring and duplex escapement, and the watch-wheel cutting-engine. He invented a method of grinding spectacle lenses, by means of which more than 100 could be ground at once to the same focal power. He made the barometer a weather-glass, and the air-pump an efficient instrument. He invented a hearing-trumpet, and hinted at the stethoscope, a hint that was not appropriated until 1816, when it was applied by Laennec. He invented the circular pendulum, which was applied by Watt to the steam engine, and is familiar to us as Watt's governor, the spring balance, now known as Salter's spring balance, the sextant, the first fixed transit instrument, and the spirit level. Here, however, we must stop, not for lack of material, but to save our article from being merely a catalogue of Hooke's inventions.

Hooke had the misfortune to be outshone by two most illustrious contemporaries in two different departments, viz., Newton and Wren, but as a second wrangler of one year may be a better man than the first wrangler of another year, so the man who could stand at all by the side of such men as these must be worthy of great honour. Mr. Alexander Bryson sums up his valuable "Exposition of the Mechanical Inventions of Dr. Robert Hooke,"* in these words, "Hooke stood very near Newton. They are twin stars, forming, when casually seen, but one luminary, but when more carefully observed differing in their brightness, 'as one star differeth from another star in glory.'" Dr. Tyndall concludes his first lecture on "Sound" with an extract from Hooke's works, and says, "I do so the more willingly, because I fear his contiguity to Newton has too much dimmed the name and fame of this extraordinary man."

Hooke, however, has not merely been neglected, he has been maligned. Biot most unjustly said of him, "Hooke est mort; c'était un homme de génie et un mauvais homme; la société y gagne plus que la géométrie n'y perd." This epigrammatic dictum is perfectly untrue, and is merely founded on the fact that he was jealous and irritable. It would be meting out peculiarly hard measure were we to gibbet as bad men all the great who have been unamiable. Hooke had some excuse for his irritability in that he was often right in his quarrels, and for his jealousy in that he was often robbed of his ideas. Aubrey hints that even the great Dr. Wallis "steals feathers from others to adorn his own cap. For example, he lies at watch for Sir Christopher Wren's discourse, Mr. Robert Hooke, Dr. William Holder, &c.; puts down their notions in his note-book, and then prints it without owning the authors."

It is said that at first Hooke was very communicative of his discoveries and inventions, till as he affirmed some persons, improving upon his hints, published them for their own, which at last rendered him close and reserved.

We have on a former occasion* drawn attention to some of Hooke's scientific claims, and shall, therefore, now confine ourselves more particularly to his work as an architect, giving, however, at the same time a short sketch of his life. Robert Hooke was the son of John Hooke, minister of the parish of Freshwater, in the Isle of Wight, where Robert was born on the 18th of July, 1635. For the first seven years of his life he was so weakly that his parents had little hopes of rearing him. He was willing to learn anything, but his father gave up teaching him on account of his frequent fits of headache. Being left to himself, he spent his time in making little mechanical toys, and discovered as a child the same taste that possessed him through life. He took an old brass clock to pieces and made a wooden one that would go; he constructed a little ship that would sail, and copied several prints with pen and ink. At the time of his father's death he was twelve years of age, and on account of his fancy for drawing he was placed with Sir Peter Lely, but the smell of the oil colours increasing his headaches he was obliged to leave the painter's studio. He now went to Westminster, and was a scholar in the great Dr. Busby's house. He advanced so rapidly in his studies that he was sent to Christ Church, Oxford, in 1650 or 1653, as a servitor to Mr. Goodman. About 1655 he began to attract the attention of the knot of philosophers then living at Oxford. He assisted the celebrated physician Dr. Thomas Willis in his chemical researches, and Dr. Seth Ward advised him to apply himself to astronomy. He attended the meetings of the select society that afterwards grew into the Royal Society, and became assistant to the Hon. Robert Boyle. In 1659 he invented and communicated to Dr. Wilkins thirty different modes of flying, and contrived artificial muscles to fly with. In 1662 his life's work was commenced by his appointment, on the motion of Sir Robert Moray, as curator of experiments to the Royal Society. Sir Edward Hyde, chancellor of the University of Oxford, conferred on Hooke the degree of M.A. in 1663, the same year in which the Royal Society was established by royal charter, and Hooke was nominated by the council one of the original fellows. Now his duties continually increased. He was appointed keeper of the Society's repository or museum, to which was added in 1664 Daniel Colwall's collection of natural and artificial rarities. Soon afterwards he had the care of the library thrust upon him. He succeeded Dr. Dacres as professor of geometry in Gresham College, and had an annual stipend of 50*l.* for life settled upon him by Sir John Cutler, on the condition that he delivered certain lectures. Dr. Ward might well observe, in his "Lives of the Gresham Professors," that "a person of less abilities than he would have found it difficult to discharge the duty of these several employments at once with reputation, but so great was his industry, so accurate his skill in every province he undertook, and his mind so fruitful of new inventions, that he went through them all with general approbation." The council of the Royal Society always found Hooke ready to obey their wishes. One day the Duchess of Newcastle expresses a desire to attend a meeting, and Hooke is directed to prepare some experiments. At another time the Queen requires a thermometer, Hooke can supply one. No subject seems to have come amiss to him, be it the transfusion of blood, the structure of the muscles, or theories as to the contagion of the plague. He was able to take his part in all the questions as they arose, and he turned to architecture because circumstances made it the question of the day. On the 19th of September, 1666, he exhibited his model for rebuilding London to the council of the Royal Society, who were well pleased with it. Sir John Laurence, the late Lord Mayor, addressed himself to the Society, and expressed the Lord Mayor's (Sir Thomas Bludworth) and Alder-

* "Edinburgh New Philosophical Journal," vol. iv. (1856).

* *Builder*, November 28, 1868.

men's approbation of the said model, and their desire that it might be shown to the king, they preferring it much to that which was drawn up by the City surveyor. The president answered that the Society would be glad if they or any of their members could do any service for the good of the City, and that Hooke should wait upon the king with them and his model if they thought fit to present it. Waller had not seen this model; but he had heard that all the chief streets, as from Leadenhall-corner to Newgate, and the like, were designed to lie in an exact straight line, and all the other cross-streets turning out of them at right angles. All the churches, public buildings, market-places, and the like, in proper and convenient places. Hooke's scheme came to nothing, because two others, viz., those by Wren and Evelyn, had been previously brought under the king's attention. Although the chief responsibility of rebuilding the whole city devolved upon Wren, that great man recognised the advantage of obtaining the skilled assistance of Hooke, and for several years the two worked together. On February 6th, 1667, experiments were tried for raising weights by the force of gunpowder, preparatory to those which were afterwards used in throwing down the masses of masonry in the ruins of St. Paul's. In these Wren was assisted by Hooke, Boyle, and Moray. Hooke's model drew the attention of the Corporation to him, and obtained for him the position of City surveyor. He laid out the ground of the several proprietors in the rebuilding of the City, and had no rest, early or late, from persons soliciting him to set out their ground for them at once. In this occupation he made a considerable sum of money, which he locked up in an iron chest, and did not touch. Hooke drew the attention of the Royal Society, in 1666, to the fact that those earths which will vitrify make the more lasting bricks, and it was ordered that he should make trials of several earths, by burning them in a wind-furnace, to see which kind would yield the best brick. He afterwards proposed an expeditious way of making bricks. In 1668 he presented to the Council a design for the Society's new house, or college, to be built on a piece of ground given them by Henry Howard, of Norfolk; but it does not seem to have been approved, for Dr. Wilkins was desired to procure Dr. Wren's design for the building. Not only was Hooke's plan neglected, but he was ordered to get a model made of the design that superseded it, and to consider of buying materials, of contracting with workmen to be paid by measure, for so much a rod and square, as also to find out a person to be constantly present, and to see the workmen do their duty. Hooke was the architect of three important buildings in London, which have, however, long been swept away,—viz., Bethlem Hospital in Moorfields, old Montague House, Bloomsbury, and Aske's Hospital at Hoxton. In 1246 Simon Fitz-Mary, one of the sheriffs of London, founded Bethlem Hospital in Bishopsgate Without, and at the dissolution of religious houses Henry VIII. gave it to the City of London, who converted it into a mad-house. This building was taken down in 1675, and the hospital removed to Moorfields. Hooke was chosen to design this second Bedlam, a view of which may be seen in Strype's edition of Stow's Survey. No time was lost in the construction as the large building, which cost 17,000*l.*, and accommodated 150 patients, was finished in 1676. The old hospital would only hold about fifty or sixty patients. In 1814 the Moorfields Hospital was pulled down, the first stone of the present one in St. George's-fields having been laid on April 18, 1812. Montague House, Bloomsbury, was built by Hooke for Ralph Montagne, third Baron Montague of Boughton, Master of the Great Wardrobe in the reign of Charles II., and Duke of Montague in the reign of Queen Anne. Evelyn went to see the house in 1679, the year after it was built, and he describes it as "somewhat after the French." When he went again in 1683 he set down in his "Diary" a much fuller account of both outside and inside. He writes,—"It is a stately and ample palace. Signor Verrio's fresco paintings, especially the funeral pile of Dido, on the stayre-case, the Labours of Hercules, Fight with the Centaurs, Effeminacy with Dejanira, and apotheosis or reception amongst the gods, on the walls and roofe of the greate roome above, I think exceedes anything he has yet done, both for designe, colouring, and exuberance of invention, comparable to the greatest of the old masters, or what they so celebrate at Rome. In the rest of the chamber are some excellent paintings of Holbein and other masters. The garden is large, and in good aire, but the fronts of the house not answerable to the inside. The court at entrie and wings for offices seeme too neere the streete, and that so very narrow and meanly built that the corridore is not in proportion to the rest, to hide the court from being overlook'd by neighbours, all which might have been prevented had they plac'd the house further in the ground, of which there was enough to spare. But on the whole it is a fine palace built after the French pavilion way, by Mr. Hooke, the Curator of the Royal Society." This house did not last for eight years, for on January 19, 1685-6, it was entirely destroyed by fire, while in the occupation of the Earl of Devonshire, to whom Lord Montague had let it for 500 guineas per year. The Countess of Devonshire and her children escaped to Southampton House in Bloomsbury-square, where Lady Rachael Russell was living at the time. Lord Montague's loss by the fire was estimated at 40,000*l.*, besides 6,000*l.* in plate, and the Earl of Devonshire's loss in pictures, hangings, and other furniture was very considerable. The second Montague House was built by Monsieur Poughet, and it was in this building that the British Museum was established in 1753.

In 1691 Hooke was chosen, at the instigation of Archbishop Tillotson, to design a building for the almshouses founded by the Haberdashers' Company, at Hoxton, pursuant to the will of Robert Aske, who left 30,000*l.* to that Company for building and endowing a hospital for the relief of twenty poor members of the Haberdashers' Company, and for the education of twenty boys, sons of decayed freemen of the Company. The architect proposed that there might be instituted a mathematical school for boys to be instructed in the principles of astronomy and navigation, which at first was well approved of by the persons concerned in the management of the affair." Hooke was blamed for exceeding the sum allowed for the building, and thus lessening the revenue of the hospital, but he asserted that this was not his fault, as alterations were made in his design, and he was not allowed to procure and agree with the workmen. The hospital was pulled down early in the present century, and rebuilt from the designs of D. R. Roper, so that we cannot tell what it was like, but Waller refers to the "due proportion of its parts and beauty of the whole."

The brilliancy of Hooke's career as a philosopher has thrown his genius as an architect into the shade, and his biographers, Waller and Ward, have paid little or no attention to his works in that capacity. Although we do not possess much material for an estimation of the opinion in which his powers were held by his contemporaries, we cannot doubt that his advice was much sought after. His judgment must have been highly esteemed by Wren, or that great architect would not have put the confidence in him he did as his acting lieutenant. Had Hooke's name not stood high as an architect, it is unlikely that the projectors of great buildings such as Bethlem Hospital, Montague House, and Aske's Hospital would have come to him at such different periods of his life as the years 1675, 1679, and 1692. Other large buildings may have been designed by him, and it is supposed that he assisted Wren in many of his celebrated works.

Hooke's last days were not happy. In 1687 his brother's daughter Grace, who had lived with him for some years, died, and he was left alone. His grief did not soon wear away, and he became less active, and more melancholy and cynical. In 1691, Archbishop Tillotson gave him the degree of Doctor of Physic, and on the 18th of July, 1696, which was also his birthday, his Chancery suit against Sir John Cutler, and that knight's executors, was decided in his favour. Sir John founded the lecture for Hooke in 1664, and, after receiving a deputation from the Royal Society to thank him for "his particular favour to a worthy member, and for that respect and confidence he hath hereby expressed towards their whole body," he neglected to pay the salary of 50*l.* a year. Cutler has not received the severe reprehension that his conduct in this case deserves, but if we compare it with his conduct towards the College of Physicians we shall see how mean and contemptible he was. In 1674, he expressed himself as desirous of defraying a portion of the expense of the new building of the College in Warwick-lane. He was thanked for his kindness, and a statue in his honour was voted by the members. After his death it was found that his supposed gift had been set down in his books as a loan, and his executors sent in a demand for this sum, as well as for an actual loan, and interest on both.

In 1697, Hooke began to write his own life, which was to contain a full account of his inventions, &c., when and how made, and by what means; but he only commenced this interesting work. One day he fell down-stairs from giddiness, cutting his head, bruising his shoulder, and hurting his ribs. He grew blinder and blinder, and for more than twelve months before his death he was almost helpless. He lived a dying life for a considerable time, and departed on the 3rd of March, 1702-3, in the sixty-eighth year of his age. His body was buried in the Church of St. Helen, Bishopsgate, all the Fellows of the Royal Society then in London attending his funeral. He had the greatest objection to making a will, and, therefore, although he had often given it to be understood that he intended to leave his property to build a handsome house for the Society, with Library, Museum, Laboratory, &c., and to endow a physico-mechanical lecture, he had done nothing towards carrying out these intentions. His property, which consisted of many thousand pounds in gold and silver, enclosed in an iron chest, locked up thirty years before his death, went to distant relations.

No portrait of the philosopher is known to exist, and this is perhaps not strange when we learn from Waller that "as to his person he was but despicable, being short of stature, very crooked, pale, lean, and of a meagre aspect." Such were the infirmities of the outer man, brought on in early life by frequently using a turner's lathe, and in later life by turning night into day. He seldom went to bed till two or three o'clock in the morning, and frequently not at all. He pursued his studies all night, and took a short nap in the day. What the inner man was we have seen, and Waller adds that he had a piercing judgment into the disposition of others, and would often give shrewd guesses and smart characters.

When Hooke died, a mathematician, an astronomer, a meteorologist, a physiologist, and a mechanic, of unusual powers left this world. The followers of all these branches of science look up to him as a master, and for the credit of our profession, we are proud to be able to add his name to the roll of distinguished English architects.

THE DESIGNS FOR INDUSTRIAL DWELLINGS, GOSWELL ROAD.

THE result of the offer of premiums (250*l.* and 150*l.*) for the first and second best designs for dwellings to be erected in Goswell-road for the Improved Industrial Dwellings Company has been already published. Some few particulars of the competition will doubtless interest our readers. The site is a somewhat awkwardly-shaped plot of land, at the point where King-street meets Goswell-road, running into it very obliquely: it adjoins Compton Buildings, belonging to the Company, and includes a printing-ink manufactory, the site of which is at present not available.

Observance of the following particulars relating to construction was prescribed:—

"1. The dwellings must be self-contained, with the entrance door-openings to the external air.

2. Each dwelling must be so arranged that a free current of external air can be passed through the dwelling by opening the doors and windows.

3. The staircases must be external.

4. The roofs are to be flat, and access to the same is to be provided.

5. The buildings must not be carried to a greater height than five stories above the basements, if any, and no rooms are to be less in height than 8 ft. 6 in. between floor and ceiling.

6. Dwellings of three, four, and five rooms each are to be provided, including kitchen or scullery. Shops with rooms attached are to be provided on the ground-floor in the Goswell-road frontage, having the principal entrance from Goswell-road, and separated from the dwellings over by a fireproof ceiling. Each dwelling is to be provided with separate domestic conveniences.

7. As a moderate return upon the cost of the buildings must be obtained, economy of construction, combined with strength and durability, will be one of the principal points to be considered in judging the merits of designs. Economy of repairs and good sanitary arrangements are absolutely essential."

The programme said,—"The directors do not undertake to carry out either of the two designs which may be selected, nor do they bind themselves to employ, in the execution of the works, either of the persons whose designs may be so selected." In response to their offer, twenty sets of designs were sent in, and were hung in the following order, in the first instance at the

Mansion House, and afterwards in the great hall of St. Bartholomew's Hospital, where they still are:—

1. "Fiat."
2. "Salutaris."
3. "Semper Paratus."
4. "Comfort."
5. "Work hard for a laudable object."
6. "Domus amica, Domus optima."
7. "Hygiene."
8. "Aspiro."
9. "250."
10. "Omne tulit punctum qui miscuit utile dulce."
11. "Palmam qui meruit ferat."
12. "Usui Civium."
13. "Ex sorde, dare munditiem."
14. "Efficiency with economy."
15. "Au Bon Droit."
16. "Deus nobis."
17. "Beta."
18. "Strive."
19. "Self-contained."
20. "Vi et Virtute."

The last design did not arrive within the time named in the instructions, and was, consequently, placed out of the competition. After the drawings had been received, Sir Sydney Waterlow, on the part of his brother directors, invited the assistance of Messrs. Charles Barry, George Godwin, and Alfred Waterhouse, in awarding the premiums, and the two first named (Mr. Waterhouse being detained abroad) made the following report:—

"*London*, 18th *December*, 1874.

To the Directors of 'The Improved Industrial Dwellings Company.'

Gentlemen,—In accordance with your instructions, we, the undersigned, have examined the twenty sets of plans sent in for competition for the premiums offered by you for designs for buildings to be erected on the estate purchased by the Company in Goswell-road, under 'Instructions to Architects,' dated the 14th May, 1874.

While several of these designs show evidence of the devotion of much time, ability, and thought on the part of their respective authors, we regret to notice, nevertheless, that no very striking and original treatment is developed in any of them. This may perhaps partly be the result of the very precise conditions by which all the competitors were bound as to height of buildings, requisition that the roofs be flat, definite number of stories, &c.; and lastly the necessity to occupy the site very fully in order to produce an anticipated satisfactory commercial result to the company from the number of rooms producing rents placed on the land.

We have agreed to recommend for the first premium the design marked 'Salutaris,' as to which we deem it fair in reference to our observations above to remark that the total number of rooms provided is small in comparison with some of the other designs, because the author has thought it necessary to provide ample means of external light and air from internal courts and open spaces, and so has not occupied the site so fully as others have done.

We recommend for the second premium the design marked 'Self-contained,' and as to this the opposite remark we think applies—the site being in our opinion somewhat too fully occupied.

We need hardly say that our selection has been guided from a careful study of the instructions issued to the competitors, and of the arrangements and accommodation (as dwellings to be separately occupied) which the designs indicate. We have also necessarily had carefully to balance advantages against defects which each plan respectively exhibits.

In addition to the two designs recommended for the premiums, we think it right to say that in our opinion the plans marked 'Strive,' 'Usui Civium,' 'Hygiene,' also deserve commendation in the order in which we place them.

CHARLES BARRY.
GEORGE GODWIN."

The directors afterwards awarded the first premium to the author of the design marked "Salutaris" (Mr. Henry Macaulay, Elm Bank, Kingston-on-Thames), and the second premium to the author of the design marked "Self-contained" (Mr. Banister Fletcher, of No. 32, Poultry).

The design marked "Salutaris" provides about 650 rooms, at an average cost, according to the author, of 50*l.* per room. The arrangement of the domestic conveniences is good, the w.c. being in an open lobby; separate access is provided to each room, and the size of the rooms is good, without being excessive. The author proposes to cheapen construction by the use of walls formed with concrete within brick facings,—an arrangement which would require care to ensure success. There are not so many shops on the ground-floor as there might be.

"Self-contained" is a good plan, well studied, and full of information, contrasting very strongly in this respect with several of the other designs, which barely explain themselves. The author proposes a total of 1,044 rooms, at a cost called by him about 67*l.* per room, which, as it seems to us, is somewhat in excess of what would turn out to be the case. The w.c. is external; the stairs sufficient, and so arranged that each tenant is entirely private, and has a balcony wholly his own. The site is somewhat overcrowded. A covering is provided to the flat roof, so as to make it available at all times.

"Usui Civium" gives a staircase back and front, scarcely necessary; there is some waste of room in passages; and the w.c. opens into the scullery, which is very objectionable; otherwise it is not a bad plan, and the site is well utilised by a bisecting street. It proposes 807 rooms at a cost of 52*l.* per room.

"Hygiene" gives good domestic offices, a compact plan (with some waste in passages), and a bad elevation; 666 rooms, no cost given.

The plan of "Strive" is ingenious, and in many respects suitable; but would place some of the rooms in constant shadow. The entrance doors are brought objectionably close together. 1,038 rooms are proposed, at a cost of 42*l.* 8*s.* per room.

"Deus Nobis" has some good features; but rooms are entered only from living-room. The w.c. is external. He proposes 854 rooms, at 56*l.* per room.

The chief objections to be observed, more or less, in the other designs are,—want of separate approach to every dwelling; want of privacy, one tenant having to pass the windows of another; the opening of one room into another; and connexion of the w.c. with the interior of a room.

The directors of the company, after awarding the premiums, came to the following resolution, which they,—somewhat hastily, perhaps,—made public at the same time that they announced the result of the award:—

"In soliciting the designs in respect of which the premiums have been now awarded, the Directors made 'economy of construction, combined with strength and durability,' a primary condition. The Directors are however of opinion that the cost of construction, if any of the plans sent in were carried out, would much exceed the general cost to which the Directors have hitherto felt themselves restricted, regard being had to the means of the working classes."

The *Times*, making this the text for a leading article, said:—

"We can scarcely congratulate the Directors of the Improved Industrial Dwellings Company upon the result of their attempt to secure proper plans for the houses they are proposing to erect in Goswell-road, though we may at least observe with pleasure that they are not themselves under any delusion as to the extent and nature of their failure. Their Company has been started so successfully that it is the more curious to observe the point at which its difficulties have begun. It has got land, capital, and, in fact, everything its projectors have asked for as necessary for their philanthropic purposes, but, in spite of all, they cannot find an architect who will be sufficiently modest in his aims to design for them the one sort of building which they require. The qualities the Directors ask for are not only strength and durability of construction, for these, we may hope, it would not be hard for them to secure. They ask also, very properly, that the plan sent in shall be economical, and the task becomes at once too hard or too demeaning for the profession to which their appeal is made."

Adding in conclusion:—

"We could wish that the ingenious gentlemen who have lately sent in their designs for the erection of new houses on the Goswell-road estate had given us better reason to believe that the profession of which they are members was at all aware of the absolutely vital importance of the condition which they have been so generously pardoned for disregarding."

The inference from this would certainly be, that the architects who had responded to the advertisement of the directors had allowed their fancy, such as it was, to run away with them, and that they had wasted money in misplaced ornament and indulgence in grandiose ideas; and the probability is that the writer in the *Times* himself thought so when he penned the words in question.

It is only fair and proper to say that this is really not the case. Many of the architects who have sent in designs may have made their probable cost greater than the cost of the houses which have been heretofore erected for the company by enlarging the size of the rooms, making the staircases more expensive in the attempt to secure additional privacy, and so on; but scarcely one of them has spent 20*s.* more on the outside than the strictest economy would assent to. The gentle scolding to which, under their garb, the profession has been subjected, is in this case quite undeserved. And, moreover, we may say, in a parenthesis, that the competitors here must not be regarded as representing the more experienced portion of the profession. If the directors in their instructions, instead of assuming that they would not undertake to carry out either of the two designs which might be selected, and would not bind themselves to employ, in the execution of the works, either of the persons whose designs might be so selected, had adopted the precisely opposite course, and had announced that they *would* carry out one of the selected designs if found suitable, and *would* employ the author of it to see it properly carried out, they might have enlisted more experienced talent than has been the case. Going back for an instant to the question of cost. We have understood that 45*l.* per room is about the sum usually expended by the Company, but it by no means follows that this might not wisely in some cases be increased. The cost estimated by the author of the premiated design, "Salutaris," is 50*l.* per room, or about 10 per cent. more. By this plan, larger rooms are given; for example, the total area of the three rooms in a three-roomed dwelling in the Company's model plan appears to be about 325 ft.; whereas, in the rewarded design, the three rooms have an area of about 394 ft., which is more than 20 per cent. larger. This would have to be looked into more carefully, of course, than we can do it. We have the fullest confidence in the right intentions and good desires of the Company, and have no doubt the directors will discuss carefully the whole question of improved plan and enlarged accommodation.

KUGLER'S HANDBOOKS OF PAINTING.

THE four volumes which, within their neat and distinctive white covers, include the latest form in which Kugler's handbooks to the study of the ancient schools of painting in Northern Europe and in Italy have been given to the English reader, though brought out by the same publisher and in uniform binding, and based on the same original author, are so far distinct in regard to editorship and manipulation as to form two distinct works,* rather than one four-volume treatise. The "Handbook of Italian Painting" in its original form, by Herr Kugler, of Berlin, was published in Germany in 1837, and an English translation by a lady, edited by Sir Charles Eastlake, was produced in this country in 1841. A succeeding German edition was followed by second and third English editions, under the same editing, in 1851 and 1855. The present edition, by Lady Eastlake, contains numerous alterations and extensions, with the intention mainly of bringing it up to the standard of knowledge of the present day. The fresh matter imported into it is derived from Messrs. Crowe and Cavalcaselle's exhaustive work, and from notes collected by Sir Charles Eastlake during frequent visits to Italy. The memoranda of Mündler, Burckhardt, and others, as contained in the "Cicerone for Italy," translated by Mrs. A. H. Clough, and noticed at some length in our columns† at the time of its publication, have also been consulted. The work in its present form, therefore, lays claim less to originality than to correctness and fulness of information within certain limits imposed by the necessity of keeping the volumes to a convenient size.

To those of our readers who are acquainted with the previous editions of the Handbook in its English form it is sufficient to say that the present edition is, in its general appearance and typography, entirely uniform with those which preceded it, and the careful and distinct outline illustrations (the best method of illustrating large pictures on a small scale in engraving) are retained, with some additions in the same style. To those to whom the book is new (and there is a continually "rising generation" of art students and travellers to each new edition of such works) we may mention that the Handbook affords a complete historical and critical sketch, in a condensed form, of the progress of Italian painting from what we may term the earlier post-Roman period down to the eighteenth century; not only the progress of the art being indicated, but every artist of note mentioned by name, with indications where to look for the most important and best examples of his genius. The Handbook is divided into sections, under the headings, "Early Christian Art,—Romanesque Style," "Second Stage of Development," "Third Stage," "Period of Highest Development and Decline," and "Restoration and Second Decline." Under the second stage of development are included Giotto and his followers, and the Sienese and other minor schools

* Handbook of Painting: The Italian Schools. Based on the Handbook of Kugler. Originally edited by the late Sir Charles Eastlake, P.R.A. Fourth edition: Revised and remodelled from the latest Researches, by Lady Eastlake. London: John Murray. 1874.

Handbook of Painting: The Germans, Flemish, and Dutch Schools. Based on the Handbook of Kugler. Remodelled by the late Professor Waagen. A new Edition, thoroughly revised and in part re-written by J. A. Crowe. Same Publisher and Date.

† See *Builder* of June 7, 1873.

of upper Italy; the third stage is represented by "masters of the fifteenth century and followers," commencing with Paolo Uccello, and ending with the præ-Titianic Venetians; and what the "period of highest development" is every one knows who has heard of painting at all. In dealing with the position and influence of Giotto in art, Kugler does full justice to his elevation of aim and intensity of feeling, while a note of "C. L. E." draws attention to the character of the man, and his "freedom from the superstitious enthusiasm of his time," as accounting in great measure for the superior dramatic interest of his groups, and his contempt for the formal style of his predecessors. In the same note (p. 120) it is well observed, in reference to the allegorical character of many of Giotto's subjects (upon which Kugler lays a good deal of stress) that "the habitual employment of allegory characterises an epoch, not an individual; for a system of conventional personification must of necessity be the gradual result of a general understanding and common education." In fact, nothing could be more alien from the spirit of a formal ecclesiastical and allegorical art than was the character of Giotto, judged from all the traces of it which survive, and which present him to us as a man having far more natural affinity with such a poet as Chaucer than with his friend Dante,—possessing at least the same high spirit, naïve humour, and healthy freshness of feeling which characterise the English poet.

In the chapter on Raffaelle well-deserved blame is given to that untrustworthy, entertaining, and garrulous writer, Vasari, for his mingled adulation and defamation of Raffaelle, including statements which modern investigation has refuted. Accordingly, "we omit the florid paragraph with which the life of this great man was introduced in a former edition. There was no need to depreciate other painters in order to exalt Raffaelle." The characterisation of the master of Urbino, as it stands in the present edition, rests on true critical grounds, and is enthusiastic without being hyperbolical or overbalanced. The weakness (if one may call it so) of Leonardo, arising out of his universality of mind and genius, by which "even in his art he was pulled in opposite directions," is rightly estimated and pointed out; and there can be little doubt of the correctness of the conclusion that "with fewer gifts there would have been more results." As it is, one must admit the justice of Kugler's remark that "nothing is stranger in history than the fact of so great a reputation resting on so shattered and uncertain a basis; on a single work long reduced to a shadow; on, at the most, half a dozen pictures, for which, or for parts of which, his hand is alternately claimed and denied; and on unfinished fragments which he himself condemned."

"The only real solution of the life and art of Michelangelo lies," says Kugler, "in the grand and independent character of the man himself": and the following passage in relation to his genius as a sculptor may be quoted:—

"Michelangelo's merits as a sculptor will ever elicit most varied opinions. To those who bow before the purity and majesty of the antique he will always be what John Gibson called him—'a great barbarian.' But all such comparison and criticism must be interdicted while judging him. In avoidance of the accidental and the individual, in a certain sense, he may be said to occupy common ground with Phidias himself; but all community of character ceases there. Having evidently no sympathy with the qualities predominant in the antique, he took the only alternative open to an original mind, by departing as far as possible from them. Beauty, repose, symmetry, and grace he eschewed; expression and individuality he aimed not at; detail of drapery or ornament he scorned. We arrive, therefore, at some estimate of the stupendous nature of that power and subjective instinct which, in the absence of all these qualities, still takes our admiration by storm."

It is always interesting to compare judgments upon the great masters of art by an able critic, nor is there any better test of the critical value of a work of this kind than the tone adopted in characterising the greatest names in painting. The secret of the peculiar magic of Titian again is ably and comprehensively stated in the remark that "the beings he creates seem to have a high consciousness and calm enjoyment of existence. An harmonious sense of dignified well-being, removed from the accidents of common life, and which may be compared to the principles which governed the antique, characterizes them all." And again—"The intellectual, the noble, and the splendid—the well-formed, the well-fed, and the well-dressed,—were the natural objects of his art: he scarcely turned the other side of the shield to view." This is most true; and hence it may be that Titian seems to want something that appeals to the tenderer and holier feelings of our nature; he does not touch our hearts, and he has always been regarded with suspicion and half dislike by the school of critics and thinkers who wish to see a moral or a religion in art; he is as thorough a Pagan, in fact, as any Greek artist could be: but look at his art from the purely intellectual point of view, and it stands supreme in its combined power and serenity. To the mention of one other painter we may refer; one whose real greatness has been recognised only by more recent critics. "No more remarkable painter than Mantegna has lived," says Kugler. "He combined an intensely realistic tendency with an ardent love of the antique, adding to these" (qualities?) "great power of invention, a solemn poetry of feeling, the grandest expression of passion, and a mastery of hand which is almost unique. Whoever has learned to relish this great master will never overlook a scrap by him"—all which, strictly within the truth as it is, will be news to many of the race of picture-gallery tourists. They may learn lessons on this, as well as on many other points, from the Handbook; meantime, it is really pleasant to come across such a thorough appreciation of a painter who appeals only to the most educated class of minds, and who has combined classic repose, stateliness, and purity of design, with Gothic fervour and romance, to a degree perhaps scarcely attained by any other painter.

It is a strange contrast of association to go from the Handbook of Italian Painting to the companion volumes on the German, Flemish, and Dutch schools. From Titian to Dürer, for instance,—what a universe of feeling seems to lie between the two; and how strange, uncouth, grisly (almost), seems the Northern art, as compared with the serene repose and voluptuous grace of the South. Yet here we find an interest sometimes scarcely inferior to that of the greatest Italian paintings, in the intense meaning and earnestness of the greater of the Northern painters. It were perhaps "to consider too curiously" to question whether such a work as Dürer's "Melancholia" was, in regard to its intellectual effect, of more or less value to mankind than such an exquisite realisation of physical beauty as the Venus of the Uffizii Gallery. The point would probably be decided by most people in accordance with the bent of their own nature, rather than on any principle; and perhaps the two things are hardly subjects of comparison. The handbook of these Northern schools has passed through more transformation and editing, since it was published by Kugler, than is the case with that of the Italian school. Dr. Waagen, in 1860, remodelled Kugler, and now Mr. Crowe has remodelled Waagen, and added copious notes and comments of his own, generally distinguished by brackets. Among the alterations from the previous editions, Mr. Crowe points out that he discards Dr. Waagen's theory of a "Teutonic school," whilst he endeavours to throw new light on the origin of painting in the Netherlands. "Some interest is for the first time given to the painters who were the precursors of the Van Eycks in Flanders. . . . . Of Rembrandt and his pupils the lives have been remodelled or re-written, to satisfy the claims of the public to an accurate knowledge of their style and productions. Almost all the data illustrating the history of the later Dutch painters have been subjected to a necessary revision. Changes of no less magnitude will be found in the accounts of German schools. Hans Holbein, the grandfather, has disappeared from the Handbook—his existence proved to be a myth. Hans Holbein, the father, is welcomed back to the rank which he had lost, and we assign to him seven of the pictures which critics had learned to attribute to his son." These and other revisions made in the new edition we must content ourselves with calling attention to; to enter into the questions involved in them would be going beyond our present limits; and the name of Mr. Crowe, as one of the most learned and conscientious students of the history of painting, scarcely needs any recommendation to our readers, and is itself a guarantee that the new edition of this part of the Handbook is up to the standard of information of the present moment.

Institution of Surveyors.—The next meeting will be held on Monday evening, January 4th, when a paper will be read by Mr. J. E. Knollys, entitled, "The Landlord and Tenant Question."

WORKING OF THE SANITARY ACT.

SIR,—I have been much pleased with your article "On the First Principles in Sanitary Work," contained in your issue for Dec. 12. Evidently you are well acquainted with the internal working of the Sanitary Act, as well as with many of the faults and failings of members who constitute these recently-formed Boards.

There are, however, one or two other matters which militate against the working of the Act, which you have overlooked. Perhaps you may not be aware of their existence. The one to which I wish particularly to draw your attention is the private connexions of sanitary officials with the Board that employ them, and their connexions with the private property of the district over which they may have control. Take for example a rural sanitary district, made up of farmers, the village rector, and the local landowner. Arrange them as follows:—

Local Landowner...	*Chairman.*
Village Rector	*Vice-Chairman.*
Farmers	*General Members of the Board.*
Landowner's Agent	*Clerk to the Board.*

And you have a Board powerful enough for anything but carrying out the Sanitary Act. This may seem to you a strange medley for a public Sanitary Board; yet, unfortunately, a state of things very similar to this actually exists.

Here the position of the farmer is merely nominal,—almost self-elected. He stands responsible to no party save the landlord or his agent. What this means we all know. He may have leanings. Probably he has. Friend Jones's house is quite out of repair; the wind and weather come through the walls and roof, and he has no closet which is fit to be used. These are all matters Mr. Hodge would like to see made right; but what can he do?—his agent is clerk to the sanitary authority, and poor Mr. Hodge finds it prudent to think the matter over. It will never do for him to hazard a complaint, or to risk a vote, when his own agent is the culprit.

Take another case, that of Farmer Tomkins. He is a member of the sanitary authority, and lives on his own farm, and might, for that matter, be considered independent; but Mr. Tomkins has four or five grown-up sons, whom he expects to make into farmers, and is himself looking out for a larger farm, having made arrangements for his own to be managed by one of his younger sons. He knows good farms are difficult to obtain, and, like "kissing," a good deal goes by favour. This makes him very circumspect at the Sanitary Board, and especially courteous in his bearing towards the clerk, who he expects may have a good farm to let shortly.

Matters now take another turn. Mr. Broadlands has received a visit from the sanitary officer, and knowing the bad state of his property, consults Friend Brown, who advises him to put himself at once into the hands of the clerk to the authority, who is an estate agent, and will be best able to take care of his interests. This Mr. Broadlands does, and finds himself well repaid for his pains. I think, Mr. Editor, I have said sufficient for the present, and beg to subscribe myself T. F.

SCHOOL-BOARD SCHOOLS.

Leeds.—New schools have been recently opened at Saville-green, also at Burley-road. The Saville-green schools are the largest, and accommodate 1,035 children. Two junior departments occupy the main block, and the boys and girls are placed in detached buildings on either side of the front. The architects were,—Mr. George Corson for those at Saville-green, and Messrs. Henman & Harrison for those at Burley-road. The schools are fitted up with Moss's patent school-board desks, and the warming and ventilating by Messrs. Shillito & Shorland's patent Manchester school grate.

Rillington (E. R. Yorkshire).—This School Board is about to erect a new school, having secured a most eligible site in the centre of the village. It is to be erected from plans prepared by Messrs. John Gibson & Son, architects, Malton.

Street Indicators.—We are glad to see that the suggestions we have from time to time given as to the names of the streets being indicated, either on the street lamps or on the lighted up postal pillars, are having some practical effect. In Piccadilly it is already done, and the Parish of Lambeth are advertising for plans and tenders for the same, which will no doubt lead to some relief of the present confusion of darkness.

BUILDINGS FOR THE VIENNA EXHIBITION.

WE have already referred to the valuable Reports on the Vienna Exhibition, recently published. The third volume contains, amongst other matters interesting to our readers, a paper on the characteristic features of the buildings of the Vienna Exhibition of 1873, as compared with the buildings erected for previous International Exhibitions, by Sir Digby Wyatt; and another, called a Technical Paper on the Exhibition Buildings, by W. H. Maw and James Dredge. We cannot attempt to give an abstract of the 103 closely-printed pages which form these reports. The amount of information which they convey is so varied, as well as so exact, that no engineer or architect, for many years to come, would be justified in attempting to design a building for exhibition purposes, without a careful study of the volume in question. But it can hardly fail to be of interest to our readers to point out some of the most salient features of this remarkable work, and to indicate some of the chief points of comparison between its structure and that of its various predecessors.

We early illustrated and described the building for the Vienna Exhibition. It may be roughly described as a nave of nearly 3,000 ft. in length, intersected by sixteen transepts (that is, sixteen on each side of the nave), and passing, in the centre, under an enormous rotunda. The two eastern, the two central, and the two western transepts were each connected by aisles at their extremities, so as to form three rectangular courts. The height of the central nave was 22 ft. 6 in.; its width, 82 ft. 10 in.; the length of each transept, north or south of the line of the nave, was 246 ft. 3 in. The square formed by the central transepts, around the rotunda, had the dimension of 676 ft.

The roof of the rotunda must be first imagined as a cone, of a diameter of 340 ft., and an altitude of 180 ft. Concentric with the great outer ring (of which we shall have to say something further), at a distance of 50 ft. from the centre, and thus of 120 ft. from the circumference, a gigantic louvre arose, from the surface of the cone, to the height of 34 ft.; the outer circle of the cone being itself raised 80 ft. above the floor. The roof, continued above the louvre, at a slope parallel to that of the lower portion, ran on till it reached within 12 ft. of the centre; in which position, from a ring of 24 ft. diameter, a straight-sided and domical cupola, surmounted by an imperial crown, rose to the further height of 60 ft., making a total elevation of 280 ft. from the ground.

Under this enormous shed, which had a diameter of 354 ft. to the face of the iron and brick pillars, 80 ft. in height, from which it sprang, the dome of St. Paul's Cathedral might be placed, with ample room to spare. Indeed, the report is illustrated by a diagram, which shows first the dome of St. Paul's (as it springs from the top of the drum), with a diameter of 112 ft. Above, or around this, is figured the dome of St. Peter's,—

> "The dome, the vast and wondrous dome,
> To which Diana's marvel was a cell;
> Christ's mighty shrine above His martyr's tomb,"—

with its diameter of 156 ft. Slightly exceeding this, in its diameter of 160 ft., and in the somewhat pointed curvature of its outline, is the dome of the London International Exhibition of 1862. It would have been instructive to add that of the Albert Hall, with its major diameter of 219 ft., and minor axis of 185 ft. Clear above the three profiles which are figured, towers the lantern of the Vienna roof. Had the outer, or lower, cone been continued, without a break, to the apex, it would still have cleared the summit of the dome of 1862 by more than a fifth part of its height; while the radius of the Vienna roof exceeded, by 34 ft., the diameter of the Kensington dome.

The primary constructive feature of this roof is the ring which receives the thrust of the girders that support the cone, and which, by its circular tension, enables the architect to dispense with visible tie-bars. The principle is, of course, known as that proper to all great domical constructions. In St. Peter's, the abutment of the dome was formed by a continuous iron chain. The strength of the circular tie must be in the same proportion to that of the horizontal tie-bars that would be required by the thrust of a wagon-headed roof, of the same span, that the weight of the dome bears to that of the vault. The circular area covered by the one is, of course, nearly four-fifths of that which would be roofed by the other, when the diameters are equal. Making the proper allowance for area, it is obvious that the power of throwing all the tension into a ring, which may be rendered ornamental as a true structural feature, and thus dispensing with all internal visible ties, is one which enables the architect to achieve his most magical triumph.

There is one point which, unless it has escaped us in our examination of these richly-filled volumes, it would be very desirable to have brought to light. We have been told, by the designer himself, of the cost of this engineering triumph. The figure cited per cubic foot was so low that we should hesitate to write it down, unless we either found it officially stated, or had before us details sufficiently minute to assure us that we were not losing sight of some element of cost. It will be very desirable, if it can be attained, to have some account of the cost of the different parts of the building. The English building of 1851, the original Hyde Park Crystal Palace, cost 193,000*l.*—less 32,000*l.*, the value of the old materials; that of Paris, in 1855, Sir M. D. Wyatt states at little, if any, short of a million sterling; that of 1867, at Paris, the same writer only describes as "enormous." The area of the 1851 building was 90,000 square yards; that of 1862, 109,777 square yards; that of the main central building at Paris, in 1867, was 183,333 square yards; that of Vienna, exclusive of covered passages and courts, 136,606 square yards. We should be glad to be enabled to compare the respective prices of these buildings, both per square yard of area covered and per cubic yard, or foot, of bulk enclosed. This is the more desirable because the preceding figures, which we have calculated from data given in this report, differ from those which, in the year 1867, were published in the daily journals. These were as follow (we leave the price in francs per square yard, as it was stated at the time):—London, 1851, 71,000 square yards, 7,500,000 francs; Paris, 1855, 115,000 square yards, 11,000,000 francs; London, 1862, 120,000 square yards, 15,000,000 francs; Paris, 1867, 146,588 square yards, 20,000,000 francs.

It is evident that a great domical or conical roof, depending on its own tension ring for unity, might be poised, mathematically considered, on any circular wall, or ring of columns or piers, that was able to sustain its weight. But in such a case the slightest difference of level would be fatal to the structure, as throwing a side thrust against the lower piers. Again, the force of the wind on the roof, or the unequal weight of snow, if in a northern part of the world, would have a similar effect. To support the Vienna cone, therefore, it was necessary that the piers should be strong enough, in combination with other parts of the building, to act, to some extent, as abutments; not against the tendency of the cone to open at its base, which was counteracted by the tension ring, but against the danger of the whole roof coming bodily in either direction.

The great tension-ring in question is formed of a circular box of wrought iron, the length or circumference of which is 1,080 ft.; the top and bottom width, 11 ft. 7½ in.; and the sides, 5 ft. The bottom of the box forms the lowest ring segment of the cone. The upper side is also the lower segment of an exactly similar and parallel cone, and the two sides stand at right angles to the roof. All four sides of this ring girder are available in resisting the tension caused by the outward thrust of the roof.

This great ring was supported by thirty-two wrought-iron box-girders, placed vertically. Each was 10 ft. by 4 ft. in section, and was made in five lengths, of 20 ft. each, the bottom length resting on wrought-iron plate bedded on concrete. The lower tier was cased in wood, and then plastered, the portion facing inwards being decorated with Corinthian pilasters. Above this was a cornice, formed of zinc sheeting, on a framework of iron, which formed a gallery running completely round the rotunda. Above the cornice, at the commencement of the second tier, was a large ornamental cone, and over this the conical roof was covered beneath with canvas, stretched as a *velarium* over the whole of the under surface. The canvas was divided into thirty equal parts or gores, each compartment being decorated with borderings, and with an angel, 21 ft. high in the centre, painted in oil.

As seen externally, the building was composed of a central block, with two symmetrical wings, all in the Italian Renaissance style after the manner of Palladio. A great triumphal arch was in the centre; flanked by a pair o Corinthian pilasters on each side; between which were a pedimented niche, a band carved in figure-subjects, and medallions of the Emperor and Empress. Above all the building towered the gigantic conical dome, which was treated, externally, with perfect simplicity. The upper part of the rotunda showed itself above the top of the roof of the circular alley of the main structure which surrounded it; and the lower roof had the appearance of a continuous abutment to the great cone.

The planning and decoration of the Exhibition buildings were directed by a committee of architects, at the head of whom was Herr Hasenauer, of Vienna. The engineering work was designed by Herren Engerth and Schmidt; with the exception of the dome, which was introduced to the commissioners by Mr. Scott Russell. The work for this feature of the building was supplied and fixed by Herr Harkert, of Westphalia, who modified many of the details of the original design.

Of the buildings in the park, in general, erected for the various purposes of the Exhibition, a lucid and readable account will be found in the report by Mr. Hugh Willoughby Sweny. Of the general aspect of the exterior of the main building, Mr. Sweny speaks as highly satisfactory; although but one point of view commanded the structure in its entirety. The spirited execution of the "arms" of each country, which were executed in stucco, and placed over the entrance to each "hof," or court, is also described as worthy of admiration. No fewer than sixty exits to the main building were provided from these "hofs," added to the originally-designed *vomitoria*. It seems, however, that the police arrangements were such as to render practically useless, for half an hour before the time of closing each day, nearly all the doors, except those of the south portal. While pointing out how far the controllers of the Vienna building were from making the best of so many former experiences, as to the accommodation of vast crowds, and the rendering splendour of detail subservient to magnificence of *ensemble*, Mr. Sweny rightly describes the independent buildings, for distinct purposes, such as agricultural halls, as leaving little to desire.

A primitive wooden village, the *fac simile* of one of those in the Styrian Alps, displayed the simplest and rudest form of construction that is applied to contemporary human habitation,—at all events, south of the Arctic regions. These cottages are formed of rough pine trunks, with pent-house roofs, covered with shingles, held down by heavy stones. Under the eaves are fixed bars to hold the utensils of the dairy. The winter store of firewood is piled close by, and a pump, formed of the unbarked trunk of a tree, is ready for use when frost will allow. Windows are unknown luxuries; the walls are no higher than the doorway; and chimney there is none. The East Galician peasant-house, on the contrary, has windows on either side of the door, as well as at the sides of the house, and a thatched roof with a wooden chimney. The peasant-houses of Northern Hungary rise a step higher in architectural dignity, having walls of planed planks, a porch to the door, and a projecting balcony round the upper story. The shingled roof is carried down over the balcony, and supported on wooden pillars, adorned by clustering hop-bines, and brilliant scarlet runners.

The Vorarlberg peasant-house is so elaborate as to be something much superior to a cottage. Built on a rubble foundation, the first story is protected by a verandah, ascended by several steps. On each story,—of which there are three, counting a sort of attic in the roof,—there is a balcony, all of which are supported by pillars carried up to the roof. The covering of the roof was of fine shingles, that of the walls of a kind of wooden scales. The whole edifice looked like one of those tiny toy Swiss cottages that are kept under glass shades, if seen through a powerful magnifying glass. More picturesque still was the Siebenburger Szekler house, with a deeply-eaved overshadowing roof, a capacious and hospitable porch, a gateway like the "lich gates" still to be found in some of our rural churchyards (as, for example, at Shalford, near Guildford), and quaintly-carved devices mingled with painting in red and blue. A long verandah ran round one side of the house, the pillars of which were hung with festoons of maize,—a vegetable which, together with the tobacco plant, the peasant cultivated in his garden. The hall, entered by a quaintly-carved doorway, adorned by those ancient marks of dignity,—

substantial door-posts,—was hung with pottery. The beams of the principal room were adorned with maize. Shelves and presses, trophies of arms, and stacks of wooden pipes, carved and painted chairs and tables, and the brightly embroidered dresses of the inhabitants, rendered the Szekler Haus one of the most novel and attractive features in the whole Park. We have referred to the presence of the door-posts, which, in Early French architecture, were jealously-guarded attributes of ancient nobility. Mr. Sweny mentions the fact that the rude magnificence of the Szekler Haus is a symbol of the dwindled wealth of the ancient aristocracy of Hungary, reduced, by constant subdivision of estate, with maintenance of equal rank for each child, to such narrow limits as to have given rise to a proverb, to the effect that "If a dog is placed in the centre of a *Slachcics* estate, his tail would hang over the bonndary."

There is a special interest attending the consideration of these wooden houses from the fact that, not more than 200 years ago, the structure of the grange, the farmhouse, and the shop, in those parts of England in which stone was not accessible, was essentially wooden. In those places where the good practice of inscribing the date on the face of a building generally prevailed, we are able to trace the graduai transformation of style, from the house with projecting stories, to that which, though still framed of timber, has vertical walls, which took place in the seventeenth century. Fine gabled houses, bearing the date of 1615 and thereabouts, hang, story after story, their broad and picturesque casements over the street. Fifty years later, in the same locality, we find a house, bearing the date of 1663, with like gables, like framing, like windows, but the framework perpendicular. Bricks are used, in each case, as filling-in between the secondary timbers; but they are generally set obliquely, and not in horizontal courses.

The Saxon architecture, displayed in what was called the Sieben-bürger Saxon house, contrasts strangely with the picturesque framework of Hungary. This was a plastered and white-washed, or rather yellow-stained, building of two stories, the upper contained in a red-tiled roof. The windows had green jalousies, and the basement served as a storehouse. The principal room was the kitchen, richly furnished with all sorts of cooking utensils. The Croatian house was a cube, containing two stories, built of planed planks, with no projections, except on one side, where the roof descended to form a small penthouse.

The champion wooden building was the house of the Chevalier de Mlodecky. Mr. Sweny says correctly that no description in pen and ink can do it justice. The projecting roof was rich with carvings. The sills of the windows were painted to resemble damask cloths. An exquisite porch was approached through a gateway of elaborate construction. The work was executed entirely by the hatchet, and its cost amounted to 30,000 guldens. The furniture was Russian in design and execution, and of a sumptuous taste. Chairs, tables, and settees were of walnut-wood, "carved clock-cases, quaint shelves, covered with quainter earthenware, or glass of Muscovite design, presses filled with linen, remarkable for rich embroidery," are all of the same highly ornamental character. Space fails us even to enumerate the various national styles of building illustrated in this extraordinary collection. A Swedish dairy; an Austrian school-house and gymnasium; the tent-like form of the ambulance establishment; an iron church; a model stable; oaken vats, exquisitely carved, and enough to put the great tun of Heidelberg to shame; are among the specimens exhibited of that craftsman-like use of timber, which is still the pride of our Northern cousins, although amongst ourselves it has gradually become extinct, owing to the result of the introduction of mineral fuel. It was but the other day that the warden of one of the City Companies was lamenting the non-existence of workmen who could produce carvings like those in which the heraldic bearings and flowing mantlets that decorate the ancient civic halls, were lovingly wrought by the carvers of Tudor time.

It is some comfort to those of us who lament the loss of one of the main motives of the picturesque character of old English scenery, to hear how our foreign neighbours pay tribute to our national power of comfort. Comfort is an especially English word. The French have had to borrow it from our language. "*Les Anglais*," an Imperial personage is said to have remarked, *apropos* of the British Commission House, or Prince's Pavilion, in the Park, "*sont absolument sans rivaux à l'égard de tout ce qui concerne le confort et la propreté.*" The building which drew forth this expression, although built of the specially unarchitectural material of corrugated iron, was so tastefully designed and decorated, with its tiled fireplace, its light verandah, and its encaustic floors, as to combine the maximum of comfort with the minimum of show. Turn where we like, at Vienna, we are sure to encounter well-known English names. Minton & Hollins, the Coalbrook Dale Company, Jackson & Graham, Elkington, Cooper & Nott, and Pavey, were the manufacturers whose combined efforts gave such thorough comforts, not uncombined with elegance, to the "Prince's Pavilion."

One feature of the Exhibition buildings should not be omitted from my notice, however general or partial. It is that of the provision made to supply water. The waterworks, which now supply Vienna at a high pressure, were unfinished at the date of the Exhibition. Thus the conductors of the building had to do their own engineering in that important branch. A water-tower 143 ft. high was erected near the western end of the machinery hall. It consisted of eight stories, framed in iron, on a basement of stone. The reservoir at the top was constructed of wrought-iron plates. It was 25 ft. in diameter, and 19 ft. high; so as to contain about 9,000 cubic feet of water. The pumps were capable of delivering into this reservoir 1,600 cubic feet of water per hour, and the head thus obtained was adequate to the delivery of a jet of water at any part of the building, with the exception of the lantern of the rotunda. The tower was erected without scaffolding, and without accident. The total weight thrown on the base, including structure and full charge of water, was about 480 tons. Nine fountains and 180 hydrants, were fed from this lofty water chamber. The well was 22 ft. deep, and 18 ft. in diameter; and the pumping was effected by a steam engine of 100-horse power.

Nothing is more calculated to impress the mind as to the manner in which the great rotunda dominated this æsthetic and industrial city of a dream, than a comparison of its diameter, of 344 ft., with the dimensions of some of the most famous buildings in the world. It was much larger than the arena of the Coliseum, which is 281 ft. by 176 ft., although the exterior wall of that building surrounds a space of 615 ft. by 510 ft. It approaches the size of the amphitheatre of Nismes, 400 ft. by 320 ft. It exceeds that of Mons, of 200 ft. by 185 ft. What would the Emperor Vespasian have said to an engineer who should have proposed to roof the Coliseum with a *velarium* of iron and of glass?

ARCHITECTURAL LECTURING.

DURING the season of meetings of societies there is a large amount of architectural lecturing done amongst us. Between the Institute of Architects and the Association, we are bound to have upwards of thirty lectures or addresses on architecture, or on something connected with it, except in instances where discussion takes the place of lecturing. These lectures may deal with various classes of subjects: they may concern the architect's social relations or education, or they may refer to scientific or to artistic problems; but nearly the whole body of addresses of this kind is reducible, from one point of view, into two classes, the literary lecture and the illustrative lecture. Under the former head are comprised all lectures which consist of pure talking, and under the other head those the chief interest of which consists in drawings or diagrams, in regard to which the lecture is mainly a commentary or explanation.

These thirty and odd lectures per annum are a rather serious concern, in one way or another. They either produce some effect, or they do not: under the latter supposition, they would involve a very serious waste of human energy on the part of lecturers and listeners alike; and under the former supposition, that they are effective in one way or another, they must be a formidable means of injuring or benefiting the profession. The influence of the two classes of lectures we have referred to differs very much in kind and in degree; and the marked predominance of one or the other is a sort of indication of the prevalent feeling of the audiences to which they are addressed. In days when architecture was almost exclusively a system of dilettante copying, the literary lecture had full play, as affording a pleasant opportunity for lecturer and lectured to assure each other that all were on the right path, and had only to follow it to arrive at perfection. But in times when architectural practice ceases to some extent to be mere copying, and takes the form of an active and experimental research after the best and truest methods of building artistically and scientifically, then the illustrative element is naturally brought more into use, and lectures may, and often do, become matters of much labour and research, and affording real practical information. And under such circumstances the literary lecture sinks more into abeyance, and comes to be spoken of sometimes with rather scant respect.

It may be taken as one sign that we really are at present in a far more healthful state of honest hard work in the architectural field than some critics would make out, that the practical and illustrated lecture is much more in demand at present than it has been for some time. The large proportion of the "papers" announced for the ordinary meetings of the Institute for the present session are, so far, of the practical type; and there is a pretty widespread feeling that enough talking has been done. At the same time, it must be admitted that the literary lecture, as an occasional contribution, has its value, as giving opportunity for looking back to and setting forth afresh abstract principles, which should not be forgotten even by the most zealous workers; perhaps, we might also say, for stimulating enthusiasm for some special branch of the art, though deeming that in general such enthusiasm is better stimulated by example than precept.

Of the literary lecture as an opportunity of setting forth principles, we have just had an admirable, we may say a typical, example, in the paper read by Mr. W. H. White at the Institute last meeting, and which we printed in full. We point to this as exemplifying the best elements of the literary lecture, both in what was included and in what was omitted. The occasion, the systematic attack on the profession by an anonymous reviewer, justified the reading of the paper, or at least gave an opportunity for looking up again the records of our professional history, and examining the basis on which the status of the architect has rested, in the past as well as in recent times. And the manner in which the subject was dealt with was in almost every way praiseworthy. The argument was continued logically from the opening to the close; not ostentatiously brought forward at every sentence, but so kept before the writer's mind that every attentive hearer could perceive the bearing of each point in the discourse, and its relation to what preceded it. The language was concise and dignified without being dull; little shafts were directed, here and there, against contemporary fallacies, with a quiet irony much more effective than any more open ridicule, and the whole lecture was delivered with clearness and point. But we wish also to draw the attention of paper-readers to what was omitted on this occasion. There was none of what our American friends describe as "tall talk," and there were no poetical quotations. These two tendencies are too often the bane of the literary lecture. The first is scarcely ever defensible, except in the case of an orator, who professedly works by rhetoric and not by logic. Poetical quotations may be introduced, no doubt, so as to give additional point and force to an argument; but the architectural mind has not usually been happy in its poetical tastes. We should be afraid to speculate how often we have read or listened to certain venerable and threadbare extracts (we will not repeat them here even by way of illustration) which the majority of literary lecturers on architecture seem to think themselves bound to introduce on some pretext or other; and as to eloquence of the "tall" kind, the masses of magnificent verbiage which exist in print and in manuscript on the subject of "the noblest of the arts," "the music of the eye," "the noble masterminds of the middle ages," and other such war-paint of the literary architect, one cannot think of without a shudder. In Mr. White's paper there was not a word of such things; and we commend it on that account especially as an example to persons who feel a predisposition to literary enthusiasm on architecture.

The same week presented us with an excellent and in one respect, at least, a remarkable example

of the other class of architectural lecture, the illustrated paper. Most of the hot and crowded audience who sat (or stood) for three hours and a half at the Architectural Association meeting at Willis's Rooms, on the 18th inst., to hear Mr. Sharpe's commentaries on the drawings which lined the walls, and the commentaries upon his commentaries, would admit that one of the speakers was pretty well justified in describing the occasion as an era in architectural lecturing. Probably there has seldom or never been a lecture of the kind delivered, in connexion with which so profuse and fine a series of illustrations has been devoted to one branch of architectural decorative treatment. The success of the lecture in this respect was due (in addition to the knowledge and geniality of the lecturer) to two causes: in the first place, the restriction of subject proposed and kept to. The excursion in France, which gave rise to the lecture, of course led to sketches of all classes of detail among the industriously-filled books of the sixty companions who made the tour. In selecting from these drawings to illustrate his lecture, Mr. Sharpe wisely determined to keep to one branch of his subject, and illustrate it thoroughly; the speciality chosen being French Gothic decorative carving. The drawings enlarged from the sketch-books of the party formed an almost complete history of the development of this class of detail in French Gothic, besides recording not a few exceptional curiosities of treatment. This is the way to make a lecture of this kind valuable; not by running over a wide field and collecting a few illustrations from every corner of it, but by taking up a limited portion of the subject and treating it exhaustively; because this is just what architects in ordinary practice have little time to do; they are frequently compelled to notice and learn everything at once, instead of going systematically through special subjects. And the other element of success lay in the co-operative system brought into action through the goodwill and enthusiasm of some of the members of the Association, in getting up a number of drawings beyond what any one pair of hands could have afforded time for, but upon a common plan and method of execution. Mr. Sharpe's directions for the enlarging of the sketches we published in part, and the success of his scheme was proved by the really splendid collection of sketches which were got together, and which had quite sufficiently the appearance of being by one hand, or, at least, the result of a common method of execution. In regard to the effect of the process adopted and recommended for such diagrams, viz., cutting out the outline of the objects drawn, and mounting the whole on a dark background, there may be two opinions; the realistic effect aimed at was not quite achieved, partly in consequence of the curling more or less of many of the drawings, and the difficulty of hanging so many pieces of paper of varied and irregular outline with anything like order or parallelism was evident. The experiment was a very interesting one, but we are not sure that we should record it as the most effective way of arranging lecture diagrams, the total effect upon the eye being rather scrappy and heterogeneous. If the aim is to make the object stand out light from a darker background, this may be obtained by using darkly-toned paper, and bringing out the lights in white,—a method which, on the whole, produces more effect with less trouble, and is somewhat more artistic in appearance and style. The drawings at the lecture were, in fact, an imitation of Mr. Sharpe's own style of illustrations in his published works, and, as book illustrations of architecture, nothing could be clearer and more useful; but in a large lecture-room a somewhat broader and heavier treatment in regard to light and shadow is necessary to make the drawings effectively visible to a large audience, unless the scale be very much increased, which again involves loss of space.

Methods of drawing, however, are secondary considerations; and no form of architectural lecture tends so much to stimulate the interest of the hearers, or to arouse it in those to whom the subject is new, as one consisting of practical comment on the development of architectural beauty as illustrated in drawings; unless it be a lecture at the buildings themselves. And this being the case, perhaps the time devoted, before the main subject of the lecture, in explaining the lecturer's particular system of Gothic nomenclature, and after it to complimentary speeches, might reasonably have been a little grudged. Nomenclature, though useful in systematising study, is not a point of the first importance; and even if it were much more so than it is, we may be pardoned for hinting that every one to whom it is a matter of interest must surely by this time be fully acquainted with Mr. Sharpe's system of nomenclature, and that it is superfluous to go over a matter of that kind on every occasion. A further extension of the lecturer's interesting and graphic remarks on the drawings exhibited would have filled up the time in a more profitable manner; and it is also desirable that the complimentary element on such occasions should be cut shorter than it generally is, or than it was on this occasion. But in spite of these partial drawbacks, most of those who were present will remember this as a remarkable effort in illustrative lecturing, and the least we can do is to hope that other similar celebrations may be possible, under the conviction that lectures on architecture carried out in such a manner as this one, are important and very pleasing agents in the professional education of the rising generation of architects.

ART-SERIALS.

THE December number of the *Gazette des Beaux Arts* contains a somewhat extended article on Asiatic architecture, the text of which is Texier's work on Asia Minor, of which the article is ostensibly a review. Those who have made this subject a speciality may be interested in this notice of it in an art periodical which always deals thoughtfully and adequately with architectural subjects.

The illustrative department of the leading French architectural papers is rather deficient in special interest in the last month or two; the most important illustration in the last number of the *Revue Générale de l'Architecture* being the Hôtel de Figaro, of which M. Sauffroy is architect, and which may be praised for showiness, but certainly not for refinement. The November number of the *Encyclopédie d'Architecture* brings us an illustration of an effort in monumental design which is, at any rate, startling enough. This is a monument "*Aux Morts en combattant*," 14th September, 1870, by M. Bartholdi, sculptor, and consists of a large headstone with inscription, and a massive slab occupying the usual position of the sarcophagus, but which is represented as tumbled down in two blocks, which have fallen half on one another, and from between which emerge the head and arms of a man who has been crushed between them, and is vainly struggling to free himself. Anything more ghastly, and more at variance with a reverence for the solemnity of death, it would be difficult to imagine: it is painfully indicative of the unhealthy state of feeling of those who could order and execute such a work for such an object. A novelty of a less startling description in the *Encyclopédie* is an elevation and plans of a building for a chocolate-mill (M. Saulnier, architect), in which brick and terra-cotta are employed in working out the architectural features. There is some originality in the design, which is a good example of the architectural treatment of a building of this class.

Among the special illustrative works which are being brought out in serial form at present, *L'Art Arabe*, edited by M. Morel, and now at its "second part," deserves attention as a very fine work, illustrating in splendid coloured plates the detail of Saracenic art. The last number is chiefly occupied with wall decorations in inlay, weapons, and ornaments of dress, &c. A lamp in enamelled glass (fourteenth century), is remarkable for its fanciful ingenuity of design and richness of colour, which is reproduced in the chromolithograph with great brilliancy. A kind of companion work to this is *Architecture et Décoration Turques*, edited by M. Leon Parvillée, also largely occupied with illustrations of wall decoration and ceilings, but including besides, as its title implies, illustrations of architectural detail in the more usual sense, and drawn with all the care and finish possible. The surprising thing in regard to all this elaborate illustration of Eastern art by French artists and architects, is that there should be so little evidence in contemporary French work of anything being suggested or derived from it; not only as regards detail, but even in regard to general feeling, the favourite style of French decoration seems to owe nothing whatever to these glories of Oriental design which are so largely illustrated in French publications. Perhaps it may be this very consideration which induces these publications, however, and we shall see their effects in time.

The *Histoire de la Céramique*, to which we referred a little time since in some former notes, keeps up its interest, for those to whom the subject has special interest, as a medium for the illustration of curiosities and beauties of the ceramic art, chiefly in the illustration of relics of old date and unique character; which latter quality, according to *Punch's Almanac*, is the great desideratum among amateurs of china.* Another special class of decorative design has its own publication to illustrate it, in the German *Ein-gelegte Marmor-Ornamente des Mittelalters und der Renaissance*, by Herr Valentin Teirich, the December number of which contains many wall inlays and pavements, of marble inlay only, from the churches of North Italy chiefly, Siena Cathedral, Santa Croce, Florence, and other well-known buildings. The collection, in one publication, of specimens of this now not much used class of work brings out forcibly the peculiar character, so entirely different from that of tile decoration, which belongs to it. A book of details of *La Capella di S. Pietro, nella Reggia del Palermo*, drawn by Andrea Terzi of Palermo, is a very good monograph of a building, interesting historically as well as artistically, as a relic of the temporary foothold of the Arab on the shores of Sicily. As a monograph of an exactly opposite kind of interest, we may mention that of the *Königliche Schloss* at Berlin, by Dr. R. Dohme (December, 1874), consisting of plans and large photographs of this bare and cold-looking structure.

The "sketch-book" of the Architectural Association seems to be kept up with great diligence and a continued excellence of draughtsmanship. The recent numbers indicate the prevalence of the Queen Anne epidemic among the members; among some good and careful drawings of work of this date may be mentioned a double page of drawings of sundry iron work in different parts of London; the value of which has been pointed out in earlier volumes of the *Builder*. In many of the iron gates, railings, and lamp standards of this period may be found much very good and sensible design, precisely suited to the nature of the material, and really often more pleasing and effective than the spike and elbow style of wrought iron lately so much affected. This is a point in regard to which we may fully admit a considerable excellence in the Queen Anne period.

In turning over the English art-serials of December, we may mention an illustration in the *Portfolio*, which is of interest in more than one respect, being an etching by Gaucherel of Inchbold's view of "Charing-cross." This is not, as the title would lead one to expect, a perspective street scene, but a view from the opposite side of the river, in which the Charing-cross Railway Station, and the chimney and roofs of the hotel in the rear, form the central object against a summer evening sky. It is worth while for the artist and amateur to note how it is possible to obtain a highly poetic and suggestive composition from materials which might be thoughtlessly regarded as hopelessly commonplace and prosaic; and also how finely and suitably the art of etching lends itself to the representation of an effect of this kind.

ON THE ORNAMENTATION OF THE ROMANESQUE, TRANSITIONAL, AND LANCET PERIODS IN THE NORTH OF FRANCE,

As exemplified in the Churches visited in the French Excursion.†

THE church at Montmartre had not yet been either painted or restored; and they therefore saw it, Mr. Sharpe said, under favourable conditions of study, although partially in ruin. It contained amongst its capitals some fragments apparently of Roman work, which had been taken from some building situated on the same site, which was the summit of the high ground that overlooked Paris from the north. The church belonged almost entirely to the Transitional period, and contained some interesting examples of ornamentation. At St. Denis they were received by two members of the chapter; its church, as it stood at present, belonged to two periods, principally the Transitional and the Geometrical. The works of both were of paramount interest. Of the earlier building, the west end and the choir, with its crypt, alone remain. It possessed throughout all the strongly

* See the touching delineation of the lady collector, who has broken a valued saucer, and has "nothing to live for," not even her little girl: "You, child! You are not unique; there are six of you, *a complete set!*"

† See vol. xxxii., p. 1067.

marked Transitional features that they found in so many churches of this district; but there was one circumstance in which, as the representative of their northern buildings, it required especial notice. A large number of its contemporaneous windows were not circular, as they would expect to find them, but pointed. As these buildings were by no means to be reckoned amongst the later works of this period, this exceptional circumstance seemed to justify the conclusion that the pointed arch made its appearance in arches of decoration earlier in the north of France than in any other part of Europe; but they were by no means thereby justified in assuming, as many French architects did, that St. Denis was the earliest Gothic building in Europe, for in all other respects its treatment was very far removed from that which they were accustomed to look upon as characteristic of true Gothic work. Upon this building a great inroad was made in the Geometrical period, when the nave and transepts were taken down, and the magnificent design which now occupied their place was interpolated between the western towers and the choir. He was disposed to consider the *main idea* of the design of the nave and transepts of this church, as presented in a single compartment of these members of the cross as amongst the very finest, if not the very first, example of Gothic work in Europe. The church of Gonesse had a very interesting Transitional choir, with a circular aisled apse and tower, and with original flying buttresses, very like those of Canterbury Cathedral. It had also a characteristic nave and west front, of the Lancet period. At Louvres they found an interesting Flamboyant Church, with a well-preserved late Romanesque doorway, and a picturesque detached south-west tower, of somewhat later date. At Senlis they found the archiprêtre of the cathedral and a deputation of the Archæological Society of the Department awaiting their arrival in the cathedral, the essential parts of which belonged to the Transitional period. The transept ends were remarkable examples of the profuse manner in which the Flamboyant architects lavished their ornamentation, in clothing and overlaying the work of their predecessors. The upper part of the west front, with its remarkable spire, belonged to the Lancet period. The central west doorway was a good example of the remarkable sculptured doorways of the Transitional period, of which the west doorway of Chartres Cathedral was one of the earliest in the north, and that of the south porch of Le Mans Cathedral one of the richest. St. Pierre was now a desecrated church, and was occupied as the stable of a cavalry regiment. It had an interesting early tower attached to its north transept, and a very pretty Flamboyant west front, with much elegant though late detail in its three doorways. At St. Frambourg there was to be found a vaulted apteral chapel, of a single span, of the Lancet period, with an eastern apse, and a large circular west window, possessing some details of interest. St. Vincent was a plain, broad, lofty apteral cross church, which was covered throughout with quadripartite vaulting, resting on half shafts on the walls. It belonged entirely to the Transitional period, and had pointed arches of construction, and the circular arches of decoration. A plain tall tower on the west side of the north transept appeared to have been added at a somewhat later date. The church of St. Vaast had a very narrow Transitional nave, with characteristic pier capitals of varied design, several of which were on the walls. It had also two doorways of the same period, one under a west porch, and the other with a very remarkable tympanum of figures and arcades on the south side. The rest of the church,—transept, crossing, central tower, and apse,—belonged to the Lancet period, and was extremely picturesque, whether seen from the interior, or outside from the east end, where the pyramidal group, crowned by the saddle-backed central tower, was very striking. At Cirés-les-Mello they had in its nave another interesting example of a north French church of the Lancet period, which, compared with that of Montataire, and afforded them a well good opportunity of perceiving how great a difference there was between the work of this period in France and that of the same period in England. There were a west door and a north porch, both containing interesting features, and a well-buttressed south-west tower, forming, with the west front, a very picturesque design. The church at Mello, formerly collegiate, had been so thoroughly restored as to have lost much of its authenticity and primitive value, scarcely a single piece of ornamentation having escaped the modern chisel. It was a cross church of some interest, with a very short nave, and transepts, which had lost its choir. It belonged to the very close of the Transitional, or the commencement of the Lancet period, and had a south doorway, which, before it was restored, must have been very interesting. Mr. Sharpe thought that few would hesitate to admit that if the choir of Beauvais Cathedral be not the most beautiful, it was certainly the most sensational Gothic interior that existed. Its height from the floor to the top of the vault was 154 ft., which was that of an ordinary Lincolnshire tower and spire. It was 18 ft. higher than Amiens Cathedral, the design of which had been favourably compared with that of Beauvais, by Professor Whewell, who apparently preferred the former, and graphically illustrated the effect produced on his mind by comparing Amiens to "a giant in repose," and Beauvais to "a tall man on tip-toe." The church of St. Etienne had been a very important transitional structure, of which the main portions still remained. There was a great deal in rich carved work on the north front of the north transept, and on the north doorway of the north aisle. The choir was a Late Flamboyant design. At Beaumont-sur-Oise there was a noble five-aisled church, commenced at the close of the Transitional period, and completed in the Lancet period. He ought not perhaps to say "completed," for the clearstory of the nave was wanting, and whether it was ever constructed or not it was difficult to say; but the nave was lofty even without it. There existed no better illustration than this church presented of the affinity between the styles of the two periods. Students not knowing where to look for the indications which distinguished them might easily suppose the building to be altogether in one style, and built from the primitive design, which, however, was not the case. Perhaps the most picturesque church in the valley of the Oise was that of Champagne, with its tall, central tower, which, however, was unfortunately covered with scaffolding, preparatory to one of those fatal restorations to which the French were so prone. It belonged to two epochs—the Transitional and the Lancet, with a clearstory to the nave of Geometrical date, and a south porch of Renaissance work. Having referred in detail to what the members of the Association learned, Mr. Sharpe went on to say that he would tell those present what they learned. He had devoted his efforts that evening to the treatment of one particular branch of the great art of building during the Middle Ages in the North of France; and he had no hesitation in selecting the carved work of these early buildings as the particular subject to bring before them that night; first because the progress of art in this district was more readily traced by its ornamentation than by any other of its features; for they had not in this country the infallible test of the date of a building, and of this progress in art, that they had in their country. He meant the changing profiles of its moulded work. Secondly, because there could be no doubt, that if they were to select that part of a building in which was centered the chief character of the building and spirit of the design, it was that point where the descending arches fell upon the capital that crowned the piers. Lastly, it was one which, for this reason, most artists sought to fix in their minds, and transfer to their sketch-books. In making his selection, then, from the sketches which were kindly placed at his disposal, he chose those drawings which best illustrated this subject. They presented a very complete series of illustrations of two Periods of French art in the north, the Transitional and the Lancet; they were all enlarged, chiefly by the artists themselves, on a system, and in a manner which he suggested to them, in order to fit them as wall diagrams. These drawings spoke for themselves, and the whole of them on the walls were from sketches made by members of the party during the excursion. He then described in detail the various works which represented the Transitional period. Referring to the acanthus, he said that it was a curious leaf, and they scarcely went anywhere but what they saw some specimens of it, some of them being very elaborately done, while others were of a clumsy character. In Chalons there was a series of magnificent capitals with the same type of ornament, and in the Hôtel Dieu there was a great variety of these capitals, Beauvais showing another example. Another curious feature of the Transitional period was the volute, which was carved the reverse way, and it was noticeable how the little volute was differently used in buildings. They came to another ornamentation, which was contemporary with it and the acanthus, which resembled something like the ace of spades, which was to be seen at Nantes. In Le Mans there was a shaft, with some beautiful ornamented capitals, with an overlapping leaf. Alluding to the Lancet period he said that there was very little difference between it and the Transitional period. It was a fact, he maintained, of which they ought to feel proud, that they had artists who seized the features of the Gothic work earlier than any other artists. There was a leaf, which was somewhat similar in character to the acanthus, the idea that suggested it really coming out of the acanthus; the leaf was attached somewhat clumsily to the capital, and did not grow out of it as their English Lancet work did, which was in the form of a single sprout. In some instances it resembled a great sprawling leaf, but it certainly was not elegant. Mr. Sharpe then drew attention to the curious manner in which the French almost universally finished their bases by a fishhook or spur at the angle of the base, which was an ornament that covered the space that was left between the circular and square base. In referring to the fine specimens which were exhibited on the walls, representing several figures exemplifying the singular manner in which the French treated their doorways, which drawing, he said, was taken from the south porch of the Cathedral at Laon, he said the French had the art of carving human figures before they were attempted here; and in France they found great dignity, simplicity, and quaint treatment of them.

In conclusion, Mr. Sharpe made a few remarks of a general nature. In the first place, no one, he thought, could have gone home from this excursion without having been greatly impressed with the vigour, the originality, and the fertility of invention displayed in the buildings which belonged to that period of art to which it was only of late years that they had accorded a separate classification. He meant the buildings of the Transitional period. They were, moreover, far more numerous and important, as a whole, in the district that they traversed than those of any other period, and they appeared to have exercised in this country a far greater influence over the style and character of the works of the succeeding period than was the case in England. Indeed, so few were the changes introduced into the architecture of the north of France during the period, that corresponding with the Lancet period in England, it might be almost regarded as a continuation of the style of the Transitional period, whilst the earlier use of the pointed arch in arches of decoration in the Transitional period still further reduced the points of difference that in this country distinguished the two periods. In the next place, they could not fail to be struck with the manifest difference that existed between the work of their own country and the contemporaneous work of the north of France during the Lancet period. Here we have the clustered pier, with its light, detached, banded shafts; the circular capital, with its round-edged abacus, and elegant bulbous conventional foliage; and the deeply-moulded pier-arch of several orders. There they had the single columnar pier; the square capital, with its square-edged abacus, and its plain crocketed capital, varied, perhaps, with a plain, flat, foliated leaf, and the plain pier-arch of two orders, carrying uniformly a single relieved roll at the corner of each order. Here in England they had a tall hooded lancet window, of which the window-arch was enriched with deep mouldings; while in France there was a plain, broad-pointed window, without mouldings or ornamentation of any kind. The one was the earliest embodiment of the spirit of what they were accustomed to look upon as Gothic work; the other breathed throughout the spirit of the style from which it took its origin, without its richness, its variety, and its inventiveness. Thus the easy and natural transition, by which their own architecture gradually passed at the end of the twelfth and the beginning of the thirteenth century, from the earliest into the fully-developed Gothic of the middle of the latter century, could hardly be said to have had any existence in France. French architecture, in fact, passed almost directly from that of the Transitional period to that of the Geometrical period. As to the direction of the Geometrical period in France, he would not then offer any opinion, but he was disposed to believe that Geometrical tracery, introduced as it was into French work some

fifteen or twenty years sooner than it was into English work, continued in use long after curvilinear tracery was practised in England. Of the work of the Curvilinear period in France, whatever might be thought of the work of the latter part of the period, when its essentially Flamboyant character became strongly developed, it was impossible not to recognise in the work of the earlier part of the period all the essentials of a great national style. But of all the designs of the Curvilinear period, either in France or in any other country, there were few superior to that of the west front of the cathedral of Abbeville. Its great height and its extreme richness were of themselves sufficiently striking; it had also the advantage which the west front of few French cathedrals possessed,—with its two towers, its three great porches, and its large west window,—of being symmetrical and complete. The architectural student who would lay down for them a correct geometrical elevation of this fine front would render a great service to all those who were interested in the study of the richer forms of Gothic art. To an English student nothing was more remarkable than the extreme poverty of the moulded work of these two great periods of French art: from the commencement of the Transitional period down to that of the Geometrical period, they had, almost invariably, one mode only of ornament, viz., the pier arch,—that, namely, of placing a roll at each edge of the order. In the earlier period this was relieved, as in the Norman period, by a simple quirk. In the Lancet period the same form occurred, only the relief was greater.

Before Mr. Sharpe sat down, he proposed a resolution to the following effect:—That the thanks of the Association be given to the bishops; to the authorities of the Cathedral, both ecclesiastical and civil; and to the clergy of the parishes through which the Association passed, for their great courtesy and kindness in vieing with each other to see who could be the most attentive to meet the requirements of the members.

The Rev. Mr. Hutchinson, in seconding the resolution, said that it was very noticeable, considering the feverish state of France at the time the Association went through the country, that they were always met with attention and courtesy. The clergy, at the different places through which the Association travelled, had referred to the quietness in which this great Association pursued their work, and at the same time expressed the honour they felt at being allowed to show over their churches the members. In their journey, the Association had impressed upon them feelings which they could never regret; and for five years he (the speaker) had enjoyed the pleasure of accompanying the Association in their visits; and he trusted that their great work would be extended in this country in a manner which some people did not think it capable of.

Mr. Penrose proposed the second resolution, which he considered it a privilege to do. He had for two years joined in their interesting and profitable excursion, under the able leadership of Mr. Sharpe, and he most heartily reiterated the remarks made by the Rev. Mr. Hutchinson. The proposition was one, he thought, which they would gladly accept:—That the thanks of this Association are due to those gentlemen of the profession who helped us in our pursuits." In many cases, he said, the help was offered to them at a great sacrifice of time. The Association was kindly received at Senlis by the Archæological Society, as also it was by the architects at Beauvais, and one gentleman, an eminent architect, came expressly down from Paris to assist them. At Euvres, too, they were received by the archæological authorities of the town, who had reason to deplore the sad destruction of the older part of Euvres Cathedral, under the so-called restoration, which, in many cases, meant the entire removal of an old work, in order to show how well it could be put back again. At Laon they were shown the cathedral, which had been restored most conscientiously in every single part, so that there was no atom of the old work injured. They were charmed at what they saw, and any Association that might visit Laon would be pleased at the manner in which the work was executed.

Mr. Robins formally seconded the resolution, which was, along with the former resolution, carried.

Mr. Sharpe then thanked gentlemen for putting the diagrams on the walls in the form they were now exhibited, and was obliged to those of the members who had carried out the suggestion that he had made, that the sketches that they took in their sketch-books should be enlarged and put into the form which would render them useful as wall-diagrams, for the instruction of those members of the Association who were not with them in France. Amongst those gentlemen who had carried out their instructions in an able manner, he might mention the names of Messrs. Penrose, Clarkson, Paice, Fowler, Drew, Robins, Henman, Johnson, Kersey, Vacher, Eales, Brown, Waddington, Barlow, Baldwin, Avern, Cutler, and Hayes.

Professor Donaldson said, that nothing of late years had afforded him so much pleasure as finding himself in the presence of so many young men connected with architecture, for their works were drawn accurately, as could be seen by the perspective, giving a full idea of what the French architecture was like. Referring to the lecture, he thought that Mr. Sharpe had hardly done sufficient justice to the Byzantine works, for they owed much to the East, Professor Donaldson thought, for the introduction of the Pointed arch into Europe by the Crusaders. M. Guizot, in one of his works, dwelt much upon this topic, and showed them how the Crusaders, going abroad when the arts were little known in this country, brought with them, as evidence where they had been, artists who introduced that luxuriant style in order to show that the Crusaders had been in foreign parts; they, therefore, owed very much to the Crusaders. It was a great delight, the Professor went on to say, to see the great advance which the young men had made in drawing all those details of French architecture now exhibited on the walls. The school was one which had been growing up under Mr. Street, Sir Gilbert Scott, and others, and which Mr. Sharpe had helped to bring to perfection.

Mr. Sharpe then proposed a resolution to the effect that the Association generally should return its thanks to those of the officials who were interested in the preparation of the drawings and diagrams which had been exhibited.

Mr. Watkin seconded the resolution, which, having been carried, Mr. Flint Clarkson responded. The Chairman then called upon,—

Professor Kerr, who said that if he were to talk all night he could not express the feeling of esteem which he entertained for his friend Mr. Sharpe. They saw in him an amateur, who was not of a very hysterical order. He retired some twenty-five years ago, still he had retained all the associations of the artist-architect of the pure and simple designer. When they had a gentleman, like he was, coming forward at a period like the present, as he had done that night, they saw what it was to be an architect, as distinct from the amateur. Mr. Sharpe was still an architect, although he had laid down the pencil.

Sir Henry Dryden said that he only had one point to allude to in reference to the chair. He held that an amateur had quite a right to speak on it. It was well known to everybody it was not absolutely necessary that an architect should be an antiquary, or that an antiquary should be an architect; but when they came to deal with an old building, then the architect who was not an antiquary, was not a right person to put to the work; but Mr. Sharpe had been leading the profession of architects to be antiquaries. They could not go into a county in England without seeing numerous and perfectly irretrievable damage done by architects, because they were not antiquaries. He felt very grateful to Mr. Sharpe, not so much for his teaching drawing, but he knew of no professional architect who was such an antiquary. Whenever they obliterated a single bit of old building, he said, they obliterated one of the lines of their own country's history. Generally, the preservation of the old buildings was much more due to the amateur than it was to the professional architect.

The President, in thanking Mr. Sharpe for his excellent lecture, caused much laughter by saying that at the time the Association made their visit, it was generally reported in some of the French newspapers that the Association was a large body of English *savants*.

Mr. Spiers said the present occasion was the first time Mr. Sharpe had favoured them with a paper relating to the occasion of their excursion, that had now become annual, and he hoped that it would not be the last.

Mr. Sharpe having replied, the proceedings terminated.

A Builder's Benevolence.—The late Mr. Thomas Jump, builder, of Liverpool, has left 45,000*l.* for charitable purposes.

ON PROFESSIONAL ETIQUETTE.

"ETIQUETTE!" I cried, as Pilgrim uttered the word, "its mere full-dress sound torments me! What is etiquette to me? A good bold, honest, open-minded fellow, who does not know the meaning of the word, is the man I want, not the most punctilious observer of ceremonial that ever crushed an opera-hat under his arm at an evening party."

"And yet," exclaimed my friend and neighbour, Pilgrim, softly, "etiquette may be a good make-weight, a good temporary stop-gap for your honest man. While the law of 'the survival of the fittest' reigns in professions as elsewhere, he may soften the rigour of the combat, and even somewhat direct and guide the subject-matter of the struggle."

I did not answer directly; but, after a moment's pause, I continued, "the law of 'the survival of the fittest!' But who and what is the fittest? that is the question. Fifty men may enter into a competition, or thirty become candidates for an appointment, and no doubt the 'fittest' for the combat, as we know it, must come out victor; but what we want is to so alter the nature of the struggle that the fitness required is not the capacity to bring underhand influence to the judges, nor the ability to blind them with the brilliant blue of a sky, nor the cunning which wins the support of the electors by a note from my lord or an invitation from my lady. By the bold honest man whom I seek (who reverences the only admirable fitness) such courses as these are unknown. He will go into a competition, or become a candidate for an office, sparing no pains with his drawings and report, avoiding no trouble in making known qualifications which he thinks fit him for the office; but his honest heart, if you search it, while coveting victory for himself, desires with still greater earnestness that the best design, the candidate best fitted to perform the duties of the office sought, may be the victor. While despairing in no way of his work or himself, the honest man I seek is eager that the design and the candidate most truly desired by the wise and good side of the seekers should prevail. The question of victory for himself is, with him, second to the desire of victory for the best."

Pilgrim laughed long, and low; at last he said, "But while we wait for this bold, honest man, who may be long in coming, let us not forget to cultivate professional Etiquette, who is already with us. I'll illustrate my meaning. An architect out in the fields, we will suppose, advertises himself by putting his name on the upper part of the sentry-box before the house he is building, with the name of his clerk of the works under it."

"In the place, you mean, where the builder has advertised himself of late?" said I. "Well, what of that if it pleases the man? They must be delicate-winged flies he catches in such a web; but that is his affair."

"Truly," answered Pilgrim, a little amazed. "And if I must not talk of professional etiquette——"

"Confound!" I cried, rising.

"Well, then, we will suppose the case of which I speak, goes beyond this," he continued quickly. "We will suppose the sentry-box to have matured and burst, and re-appeared as a crop of boards on the adjoining ground, bidding inquirers to seek the terms on which "this desirable building land will be let or sold, of the aforesaid architect."

"No mention of the clerk of the works, I presume, on this more perfect development, the written boards?" I interrupted, with a grin.

"No, surely," said Pilgrim, looking at me, and then continuing, "And we will suppose an employer of yours or mine calls upon us, and saying he has seen a plot of this land which pleases him, inquires what the cost of such-and-such a house will be. We look at the ground, make rough plans and estimates, and in a day or two our would-be employer calls again. All preliminaries seem swimming fairly off; and our would-be employer goes to inquire about the 'desirable land,' promising a further call in a few days. A few days pass; a week; three weeks, and then a message reaches us through the solicitors (let us suppose) that our would-be employer deeply regrets,—he wishes it were otherwise, for his trust and confidence in us are great,—but the architect will let or sell none of the plots except he is to be himself employed as architect."

"And so?" I said, turning round.

"And so," continued Pilgrim, "through the power of some lien on the ground our employer is compelled out of our hands into those of the

architect of the boards. Should not etiquette help us here?"

"Etiquette!" I cried. "Honesty."

"No; etiquette," he replied; "professional etiquette. A man in trade sells articles, and makes his profit by increasing the price of the article sold above cost-price, in any way satisfactory to himself and acceptable to us. At the same time, however much we may be willing to accept conditions tending to the tradesman's personal advantage, we should at once demur if he endeavoured to tack his son or his nephew upon us as our architect. He might recommend him to us; but we should think that a strange condition which required us to employ him. Much less ought we to agree to the professional man himself thus endeavouring to foist his own services upon us; and much less ought he to endeavour to do so. And why is all this? Because the professional man stands on a distinctly different footing from the tradesman. He is paid a known fee for his services, and the object of the fee is to insure his placing himself, not hostilely to the employer, but as far as possible in the position of the employer, for the purpose of supplying the employer's want of technical knowledge. A tradesman, on the one hand, or he who sells and makes his own personal gains out of the sale, is one of a needful, and therefore an honourable, body of men in society, as we know it; and he is loyal to his functions in society, or, in other words, to the body of traders, when, being honest and straightforward in his dealings, he competes with the trader in qualities which allow him to stand hostile to the purchaser. A professional man, on the other hand, is loyal to the professional body when he competes with the professional man in these perfectly different qualities for which society cultivates professional men; and in the name of etiquette is this professional loyalty demanded. Fully recognising the law of the survival of the fittest, professional etiquette demands that the struggle within the professional body should be a struggle tending to the survival of the architect who possesses most, not of the pushing, self-advancing employer,—opposing qualities desired and allowed in the tradesman, but of the professional qualities, a skill and ability which inspires trust and confidence,—a skill and ability and consideration for the employer's wishes and desires which best enable the professional man to become another self to him, and thus distinctly forbid his foisting his own services upon him as part of a bargain."

Pilgrim looked at me while I said,—"You draw on your imagination, friend. You would introduce etiquette among us, that cringing image of a man, and pass him off as a living creature containing bone and sinew."

"No, indeed," answered Pilgrim, "I introduce neither the image nor the reality. I would simply disclose that professional etiquette who is already among us. Doctors do not force patients out of each other's hands by means outside their legitimate professional influence; and whether or not they are really withheld by the fire-gleams of your honesty, they will say they forbear in obedience to professional etiquette. And while a competition among tradesmen, which tends to reduce their profits to the lowest, is one main social reason for their existence, so completely would competition within a professional body be confined by etiquette to competition in the skill and ability which produce trust and confidence, that to compete with your brother architect on the charges made to employers, is frowned upon as unprofessional. To undertake, at the sole request of the employer, work on which some other architect is at the time engaged, displays disloyalty to the architectural body (as forming a living integral part of society), and is thus unprofessional; but to undertake the same work after your predecessor's engagement has been entirely closed, and your employer thus completely disengaged from the architectural body, is professional. The former course were internecine warfare in the architectural body, which is deadly; the latter is healthy, social action, in the supply of a living member for one actually dead."

"Very far fetched!" I exclaimed, putting my hand on Pilgrim and stopping him. "Why, professional etiquette, my friend, can but embody the expression of a respect (twice real to ninety-eight times feigned) of one professional man for another or others."

"Yes and no," he answered.

"And respect is for the honest living qualities; if expressed by the honest and living——"

"You do not see my meaning," he replied; "I would point out that the social feeling of the body of professional men, as manifest in the code of etiquette we find prevailing among them, forbids, to the body, the exhibition of the tradesman's qualities, and encourages the skill and ability which inspire trust and confidence,—those good and living qualities, through the possession of which alone the body has a social status. While thus we wait the coming of your honesty, we should not treat etiquette with rudeness, but rather encourage and cultivate him in his good ways."

"Well, Pilgrim," I said, "you have shown more good in etiquette than most men could find out. Let us hope he may be all you describe, and grow daily in strength and heartiness, and then, at last, strange as the transformation may be, we shall see him give a final crush to his opera hat, and (depend on it) prove himself none other than the very honest man I seek."

DIOGENES.

THE CRYSTAL PALACE SCHOOL OF PRACTICAL ENGINEERING.

THE examiners on the last occasion were Messrs. W. R. Galbraith, M.I.C.E., and R. C. Rapier, A.I.C.E. The certificates were presented to the students by Mr. E. A. Cowper, M.I.C.E., who presided at the meeting in the Lecture Theatre.

The chairman, after an address, concluded by commending the scope of the course of instruction given in the school, the discipline maintained, and the superior character of the students' work throughout, the whole of which were highly creditable to Mr. Wilson, and his son and assistant, who had charge of the civil engineering section.

Of the fifty-one students on the roll, thirty-six received certificates, including fourteen doubles. Mr. P. W. Britton, who has attended the school since it was opened, and who has taken high honours in every department, was first in merit for "calculation of strains, and the preparation of general and working plans, specifications, and estimates of a railway, and of clockwork." Mr. H. C. Dent, another very successful student, was second in merit in the same department; the remaining certificates being awarded to Messrs. W. Michels, A. Wortham, and J. Hampton. For "general surveying, and preparation of plans and estimates for Parliament," certificates were awarded to Messrs. C. S. Smith and E. Hayes.

The students to whom two certificates were awarded, one for answers to lecture questions, enabling the students to go in for examination upon the subject of "Materials and their Manufacture," were as follow (highest number of marks attainable, 232):—Messrs. A. H. Turner, 221 marks, and second, for work in fitting-shop; M. Harding, 179, and for fitting; G. D. Marston, 179, and for fitting; A. Brook, 176, and second in fitting; L. Kinder, 161, and for fitting; E. A. Thomson, 154, and for drawing; F. Fitzherbert, 152, and for drawing; J. B. Cowdy, 147, and for patterns; H. J. Saunders, 146, and second for patterns; W. J. Bean, 140, and first for drawing; H. Solly, 140, and for patterns; C. J. Swears, 132, and for patterns; R. J. Glanville, 129, and first for fitting; W. H. Fisher, 117, and for fitting; J. Adams, 103, and for drawing; and H. B. Dutton, 101 marks, and for work in the drawing-office.

For work in the drawing-office certificates were awarded to Messrs. J. H. Preston, J. N. Paton, C. Dyson, and F. A. Wythes; in the pattern-shop to Messrs. H. F. Gay, first, E. A. Brine, G. E. Bokenham, S. P. Sheraton, T. S. Tilley, and H. Edwards; in the fitting-shop to A. H. Wilson, A. E. Needham, and H. C. Cummins.

On the motion of Mr. Jacomb Hood, seconded by Mr. H. S. Bicknell, two of the Crystal Palace Company directors, thanks were voted to the examiners, and to Mr. Wilson, principal of the school.

Mr. Galbraith said that he had been particularly struck with the excellent railway drawings turned out by the pupils, which would be a credit to any engineer's office. He and his colleague had scrutinised the whole of the students' work keenly, and had been much pleased with all that they had seen. He had himself felt very much the want of such opportunities as the students enjoyed here. He counselled them not to lose chances of advancement through neglecting preliminary work, and assured them that continuous hard work was essential to future success.

Mr. Wilson stated that a number of former students, whom he named, who were now in large engineering and manufacturing establishments, had been taken either without premium, or with reductions of 100 guineas, because of the training they had received in the school, and the certificates they had earned. He paid a high testimony to Mr. Britton as an earnest worker and respectful student, who was certain to make rapid progress in his profession. Extra prizes given by Mr. Jabez Church for essays on the Enfield Rifle factory had been gained by Messrs. A. Brook and W. J. Bean.

A vote of thanks to the chairman closed the proceedings.

THE JUNIOR NAVAL AND MILITARY CLUB, PALL MALL.

THIS building, which forms the subject of our present illustration, is now rapidly approaching completion. Great difficulties have presented themselves owing to the want of lateral light, but they have been overcome. The accommodation will consist in the two basements of the necessary offices, lavatories, and secretary's apartments, the kitchen occupies the height o the two stories. There is also extensive cellarage.

The ground-floor consists of smoking-room, two dining-rooms, waiting-room, lavatories, and so on.

On the first floor are placed the reading-room, billiard-room, private dining-room, and retiring-room.

The second floor consists of private billiard-room and members' card-room, the other portions of this floor, with the three floors above, are occupied by members' bedrooms, back rooms, and sanitary conveniences. There is a chief staircase covered with a domed ceiling; a staircase for servants, and three lifts.

The greater portion of the ground-floor will be paved with tiles, manufactured by Ludwig Oppenheimer.

The style of the building is Renaissance, and the elevations are distinguished by some very bold carving. The female figures over the entrance are holding medallions representing England's greatest heroes, Nelson and Wellington. The carving throughout is symbolical of matters connected with the Navy and army. The central dormer is surmounted by large figures of Neptune and Mars.

The entrance to the building is peculiar, being semicircular on plan, the dome of which will be elaborately sculptured with life-sized figures carrying laurel wreaths surrounding the name of some distinguished officer, the bust of whom will be placed below: this superstructure is supported by serpentine columns. The object of this method of treating the entrance was to obtain additional light to the smoking-room, as also to prevent the entrance to Marlborough House being overlooked.

The building has been erected from the designs and under the superintendence of Mr. Thomas Dudley, architect. The clerk of the works is Mr. W. T. Sams; and the contractors are Messrs. G. H. & A. Bywaters. The whole of the carving has been satisfactorily executed by Mr. T. Plows, of Brixton, from the architect's designs.

The club was founded in August, 1870, in temporary premises, No. 19, Dover-street, Piccadilly, and promises to be a flourishing establishment.

In May, 1871, their Royal Highnesses the Prince of Wales and the Duke of Edinburgh consented to become patrons and honorary members of the club. His late Imperial Majesty Napoleon III. was an honorary member, and H.I.H. Prince Louis Napoleon is also an honorary member. Captain H.S.H. the Prince of Leiningen, R.N., and Captain H.S.H. the Count Gleichen, R.N., were original members of the committee.

In August, 1872, the site, next to Marlborough House, was secured, and the building commenced. It will be completed, and the members will take possession of it, next spring.

At the present time the total number of members exceeds 700, and there cannot be much doubt that when the transfer to the new house takes place, the numbers will rapidly increase, until the maximum of 2,000 is reached. It will then become exclusive, for no more members will be elected until the number is reduced to 1,600, which is to be the final complement.

THE JUNIOR NAVAL AND MILITARY CLUB, PALL MALL.——Mr. Thomas Dudley, Architect.

THE JUNIOR NAVAL AND MILITARY CLUB, PALL MALL.—MR. THOMAS DUDLEY, ARCHITECT.

NEW-CROSS PUBLIC HALL.

LONDON is the living centre of the United Kingdom; but London (City) proper falls very much short of being London real. The core of the metropolis is made up of warehouses, banks, exchanges, offices, markets, and other structures, in which commercial, monetary, professional, and consuming interests are concerned. These are all busily occupied during the day; but at night are silent and deserted.

There are two influences at work to compel citizens in business to become suburbans in residence; the high rents of house property in London and Westminster, on the one hand, and the superior attractions, for residential purposes, of suburban localities on the other; and so, what may be called numerous suburban towns have sprung into existence; such as Croydon, Hammersmith, Hampstead, Camberwell, Clapham, Blackheath, New-cross, and the like. At present we have only to deal with New-cross, which is legally and formally a portion of the parish of St. Paul, Deptford. The remarks that apply to it will apply with equal propriety to numerous other suburban districts of London.

There are few parishes in which the population is more varied and contrasting in the character and qualities of its component parts than in the parish of St. Paul, Deptford. There are districts in what may be called Old Deptford that are the haunts of the lowest of the low. In some of the principal streets, again, there are numerous respectable, well-to-do tradesmen: and then, in the southern portion of the same parish of St. Paul there is a large population composed of people who do their daily business, or get their living, in "the City"; but the City does not absorb their entire energies, or provide the local conditions necessary for the highest pleasures of family or for the proper discharge of the duties of public and social life.

The population of the City proper, at the last census was 74,732, being a decrease of no less than 37,331, upon the census of 1861. New-cross, amongst other suburbs, contributes largely to the residential accommodation of the denizens of London. In Deptford there are two parishes, St. Nicholas's and St. Paul's. The former includes the portion of the town next the river, which embraces the Foreign Cattle Market, that was erewhile the Royal Dockyard, in which Peter the Great worked as a shipwright. In this parish, according to the last census, as compared with that of 1861, there has been a decrease of 168 houses and 1,652 in population; whereas the increase in the parish of St. Paul has been 2,619 houses, and 15,862 inhabitants, the whole of the increase having been in the New-cross and Brockley districts, lying to the south of the town of Deptford. The increase in these districts since the census was taken is in even a much higher proportion.

The parish is well supplied, thanks to religious zeal, with places of worship for the various religious denominations; and, thanks to the powers of the London School Board, conferred by the Act of 1870, there has been large, almost abundant, provision made for elementary education by the erection of numerous new school buildings. But the population need a species of accommodation of various kinds that cannot be supplied by churches, chapels, or school buildings, such a desideratum as only a public hall, with connected suites of rooms, can supply. This has been at last provided by the spirited inhabitants of the district, who recently had their hall publicly opened with a *conversazione*, although, sooth to say, it was not quite ready for opening. Notwithstanding this drawback the large audience seemed to be well pleased with the arrangements.

This structure is the work of a Joint Stock Company, Limited. The hall, and adjoining suites of rooms, are built on the "Ivy Cottage Estate," Upper Lewisham-road, and are approached by a descending covered way of some length, that is well lighted and covered by semicircular galvanised and corrugated plates. At the end of the principal entrance the visitor reaches the covered corridor of the main building, and turning to the left passes on each side cloak-rooms, with lavatories attached, each of these rooms being about 39 ft. long. Another turn has to be made and the hall is entered, as regards the principal entrance, by an archway in Portland stone, the entrance being enclosed by curtains. The passages to the hall are about 10 ft. wide. The hall itself is 100 ft. long by 45 ft. wide, and 28 ft. high from floor to ceiling, and there are seven windows with semicircular heads in each side wall. The external walls are relieved by pilasters between the windows. At one end of the hall there is a movable platform, that may be adjusted to fill the whole or part of the width of the room. Movable partitions are also provided, with the intention of making the hall available for family or other parties, for hosts who may prefer the accommodation thus provided to using their own houses. The ceiling is panelled, and has a large cornice. The artificial lighting is by three sun-burners, close to the ceiling, with sixty-three jets in each. Annular chimneys are provided, by which the products of combustion from the burners and the heated air from the room are conveyed to the ridge of the roof, and there discharged. The warming appliances of the room, as now provided by two open fires, are inadequate. It should be mentioned that there are two side doors, for ingress and egress, in addition to the arched entrance before referred to. At the end of the hall there are retiring-rooms.

A side building has on the upper floor three additional rooms, 34 ft. by 20 ft., 30 ft. by 16 ft., and 26 ft. by 20 ft. respectively. In a portion of this accommodation the local Young Men's Christian Association will have their home for the next five years, at an annual rent of 35*l*. The hall is occupied almost every evening, and filled with audiences, a very small proportion of whom ever visit the Deptford Lecture-hall, or the more distant Lecture-hall at Greenwich.

The buildings are from the designs of Mr. A. B. Hutchings, architect; and the contractor is Mr. J. T. Hodson.

THE FLOATING SWIMMING BATH.

A SHORT time since a company was formed,—called The Floating Swimming Bath Company, Limited, having their offices at Queen-square, Westminster,—to construct swimming-baths for the London public, at the old depôt of the Fire Brigade, on the west side of Hungerford Railway Bridge, on the Victoria Embankment, permission being obtained for that site from the Metropolitan Board of Works. This site is well selected for the purpose, having in and out access by means of steps, and is one of the extra steamboat piers. The engineers, Messrs. Whitaker & Co., of Great George-street, Westminster, were instructed to furnish the necessary plans, sections, and specifications for the carrying out the works. Their first impulse was to form a gridiron or cradle to carry the bath 8 ft. or 9 ft. below low-water mark. The work is being carried out in the following manner. It includes a row of whole timber piles, 28 ft. long, thirty-two in number, driven by a powerful steam-engine and gear, extending east to west 178 ft. outside of the present granite apron built by the Metropolitan Board of Works; uprights to correspond, well bolted to the side of the Embankment by means of lewis-bolts, let well into the granite, longitudinal whole timbers running from end to end, well bolted through outside piles and inside uprights; cross transoms being fixed from out to out 6 ft. apart from centre to centre, well bolted through longitudinals, and two rows of hard wood packing under cross transoms, well bolted, and resting on the apron. This portion of the works was given under contract to Mr. John Chapman, the pile-driver and water-side contractor, of Stangate-street, Lambeth, who has given his whole attention night and day in carrying out the works, in conjunction with his officers and men, to the entire satisfaction of the directors and engineers of the company, without the least accident or mishap, considering that all this part was entirely done under water. When the works were started, it was found that large quantities of mud and silt had accumulated; and before the cross-transoms were laid, some hundred tons had to be dredged and barged away.

Mr. Chapman called in the services of the divers, Messrs. Smith & Sons, of Battersea, who have done all the diving operations, fixing timbers, lewis-holes, balls, screwing up in complete darkness, and have given great satisfaction. The greatest drawback and danger were the passing of the steamboats, which had orders to ease when passing, but did not do so, although a red flag was flying during the time the diver was down.

The floating-bath is finished, and lying in the West India Docks. All the ironwork attached is in the hands of the Limited Iron Company. The cradle or gridiron is nearly finished.

THE VALUE OF TIMBER ON LAND.

THE importance of forests or woodlands in enhancing the value of an estate can hardly be over-estimated. Trees, like hills, are known to affect the rainfall to a certain extent, and their presence or absence will materially change the sanitary condition of a locality. From an æsthetic point of view, too, the judicious arrangement of timber is very important. A piece of land, however well cultivated it may be, will always command a higher price if, instead of being a mere succession of pasture and arable fields, it presents the appearance of majestic beauty, with which only the existence of well-arranged and well-grown trees can endow it. A cold, bleak hill-side, impossible of profitable culture, producing a feeling of abhorrence and giving the idea of sterility, may be made both an ornament and a source of profit by being planted with suitable trees.

It is, however, rather from the commercial point of view that the subject is most important; and it is open to discussion whether this side of the question has received proper attention at the hands of landowners and others interested in the management of land,—whether sufficient consideration has been given to the probable requirements of future generations. Ornamental trees and those used for the purposes of pleasure are increasing both in number and variety, but the still more important point of planting trees with the object of affording a supply of useful timber for those who are to come after us must not be forgotten.

Out of sixty-nine forests, which at one time covered large tracts of land in different parts of England, only a very few now exist, except in name; and these, just as they were in the first instance formed or maintained for sporting purposes, are still governed by laws whose principal object is the preservation and increase, not of wood, but of game. In Germany the gradual diminution of the forests, and, consequently, the increased scarcity of wood, long since attracted the attention of Government; and the forest laws, passed with the primary object of preserving the timber, are very strict. Academies for the instruction of the science of forest management have sprung up, and great importance is attached to the subject of the preservation of timber.

Newer countries, like Canada and the United States, are already feeling the effects of the diminution in the number and extent of their forest-trees, and prudent persons are taking steps to supply the wants of the future by planting extensively.

Have we been sufficiently mindful of the requirements of posterity in making use of every opportunity to increase our stock of trees? The increased price of timber and the largely increased imports would seem to answer in the negative. The quantity of timber brought to this country from abroad is annually increasing, and in the year 1872 it appears that more than fourteen million pounds' worth of deals, battens, poles, railway sleepers, and various kinds of timber were imported for home use. Our fathers and grandfathers in the early part of this century and during last century set us an example which we should do well to follow in making plantations of useful trees. The noble trees which are the pride of many a fine estate in England and Scotland, and whose existence so greatly enhances the value of the land on which they stand, we owe to the forethought of generations long gone by. The last century is celebrated for the number of plantations that were made by such landowners as the Duke of Athol, the Duke of Portland, the Duke of Northumberland, the Duke of Montrose, and, later on, Sir Walter Scott. By judicious planting, many barren wastes, not worth a shilling an acre, have been transformed into magnificent forests, lending beauty to the scene, and increasing a thousand-fold the value of the land. The second Duke of Athol planted 6,500 Scotch acres of mountain ground—useless for other purposes—with larch. The cost is not given, but with larch at 26*s.* per 1,000, and planting 3,422 to the acre, the cost at the present time would be about 30,000*l*. Seventy-two years afterwards this plantation, calculated at 400 trees, or 1,000*l*. per acre,—a low estimate—is valued at more than six millions sterling. Besides this actual capital value, a large return may be made from a plantation by judicious thinning, which may be calculated at 1*l*. an acre per annum at least. Trees too thickly planted naturally stunt and kill each other.

But it is not our intention here to enter into the question of the management of woodlands. The point we wish more particularly to refer to is, whether we are planting enough trees to give future generations an opportunity of managing them at all. A good timber property is not the creation of a day, or of a lifetime even. An oak takes many years to arrive at maturity. Omitting the last few years, during which an impetus has certainly been given to arboriculture, it is a fact that sufficient attention has not been paid to planting during the last half-century. This is a point which intimately affects both individual and public interests, for the sake of both of which we must not allow such a momentous question as the permanent growth of timber, and the creation of a stock for its supply to future generations to escape our notice.

It is said that in the Island of Mauritius, the indigenous supply of timber had been so neglected that during the last ten years nearly 200,000*l.* worth of timber had to be imported for building, firing, and other purposes. The United States, on which we partly depended for our supply of timber, are now, in their turn, obliged to look to Canada to make up the exhausted yield of their forests, and such a fate may befall us unless we imitate the wisdom of our forefathers, and profit by the experience of the past and by the lessons of the present. Here, we no longer require the oak of old England to build our wooden walls: iron is taking the place of wood in many building operations: black diamonds have in nearly every instance superseded the use of wood as fuel; but black diamonds may fail us, and iron-clads become obsolete. In any case, however, new demands for timber will always arise. Our railways yearly consume an enormous amount of timber for "sleepers"; increased mining operations demand a larger supply, and in a thousand-and-one various ways wood will be brought into requisition. With these considerations before us we cannot do better than repeat, and follow the advice of the old Laird of Dumbiedikes,—"Jock, when ye hae naething else to do, ye may be aye sticking in a tree: it will be growing, Jock, when ye're sleeping."

REGULATIONS FOR CONSTRUCTION OF CHIMNEYS.

THE Syndical Chambers of Paris, each chamber representing a trade or group of trades, and the whole meeting at certain periods in general assembly and having its officers and a journal of proceedings both of the separate and the United Chambers, do excellent service, especially now that they have the ear of Government and are not regarded with suspicion, under the fear of their being political societies in disguise.

A short time since the Prefect of the Seine issued an order respecting the construction of chimneys in private buildings; the Chamber of Masons, considering that the regulations laid down by the authorities would at times create insurmountable difficulties, appointed a Commission to report upon the subject, which report has been received and adopted unanimously by the Council.

The following are the regulations proposed by the Chamber, which cannot fail to have an interest for all engaged in construction:—

1. No chimney-shaft shall be formed in stone walls of less than forty centimètres (16 in.) thick, plaster included, or in brick walls of less than thirty-seven centimètres.

2. Chimney-shafts in the interior of walls shall only be constructed of bricks or of terra-cotta, which shall key into the materials of the wall itself. The use of the *boisseaux* or *pots* of burnt clay (short quadrangular tubes with a lip now in common use) is absolutely prohibited.

3. The tongues of the pipes engaged in the brickwork of the chimney shall never be less than eight centimètres in length.

4. Between the interior surface of the chimney-shaft, and that of any bays formed in the wall, there shall always be twenty-five centimètres of solid masonry, plastering included.

5. Chimneys built against piers in masonry, walls in ashlar work being at least forty centimètres in thickness, brick walls of at least twenty-two centimètres in thickness, or, in garrets against brick partitions, of eleven centimètres in thickness, may alone be constructed by means of tongue-pieces in plaster, or with burnt clay *boisseaux*, covered with plaster.

6. The tongue-pieces, or the *boisseaux*, covered with plaster, above referred to, shall never be less than 65 millimètres, 2⅝ in., in thickness, over all.

7. Isolated chimney-shafts, or group of such shafts, must be constructed in the same manner and of the same materials as shafts constructed within walls.

8. Every chimney-shaft ought to have a section equal to three square décimètres, or three-tenths of a mètre. The smallest side of such rectangular shafts not to measure less interiorly than 15 centimètres (6 in.), and the angles to be rounded off with a radius of 2 in.

9. In every new building the necessary arrangements must be made in the roof to afford easy access to the top of the walls against which chimney-shafts are constructed, and, when the chimneys are engaged within the walls, way shall be made near the chimney-shafts themselves, so that the mouths of the chimneys shall be accessible without difficulty.

EDINBURGH.

IN a recent article upon the eccentricities of Scotsmen, *The World* says, "We can put up with the aggressive bumptiousness of their nationality for the sake of their warm hearts and sturdy self-respect. And they are truly noble in giving." That there is some truth in the latter statement will appear when the magnitude and number of the public works and monuments in hand in this comparatively small city is considered. No sooner is the subscription of 100,000*l.* for a new infirmary completed, than a call for a similar sum for extending the university buildings is made, and already three-fourths of the amount are contributed, and a limited competition set on foot. The competing architects were to have given in their designs by the 1st of December, but they have joined in a request for an extension of the time allowed, which has been granted.

Amongst the public monuments in hand the Albert Memorial stands conspicuous, but it is long since the project was set on foot, and it should have been realised years ago. There are four other monuments in hand which are to take the form of statues in honour of the following Scottish worthies:—Dr. Chalmers, Professor Simson, Dean Ramsay, and Dr. Livingstone; and now a movement has been inaugurated for the erection of yet another memorial in honour of the late Adam Black, publisher, who was thrice Lord Provost of the city, thereafter its representative in Parliament, and a gentleman who earned the esteem and regard of all who knew him. The form which this memorial is to take has not been decided upon, the position occupied by Mr. Black was hardly such as to call for the erection of a statue to his honour. It has been proposed to associate his name with the erection of a town-hall, but it is to be feared that in the present state of matters a sum sufficient for the erection of such a structure in a manner worthy of the city could not be raised. When we look at the splendid town-halls recently raised in several cities and towns in this country, it is to be hoped that when a similar building is designed for Edinburgh it will be second to none of these. Looking to Mr. Black's eminence as a publisher, no more appropriate memorial could be raised to him than a free library, an institution which is a desideratum in the city.

Two schemes of considerable magnitude have been mooted, the first and greatest contemplates the formation by a company of a vast structure on the vacant ground in Castle-terrace, combining an opera-house, aquarium, and winter garden. The site is free on three sides, and is most conveniently situated, both as regards the west end and the old town. The second project, which may in some sort be considered a rival to the first, is for the formation of a garden and aquarium upon the ground laid out for building, to the west of Trinity Church, and to the south of Belgrave-crescent.

The old Clarendon Hotel in Princes-street has been demolished, preparatory to the erection of a new hotel on the same site.

In St. Andrew-street an ugly and pretentious building has been acquired by the Young Men's Christian Association, and this is now being erased for the purpose of substituting a new and appropriate building for the uses of the Association.

The two new churches on the London-road, formerly referred to, are progressing towards completion; and at Dalry a new Presbyterian Church has been commenced. The new Holy Apostolic Church is completed to the wall heads, and presents a most remarkable appearance from without. Those who admire extreme severity and great breadth of wall surface will certainly find it here.

At Norton-place a large new school, having all the rooms on the ground-floor, has been completed for the governors of Heriot's Hospital; other two new schools have been designed for the same body, by their architect, Mr. Chesser, one for the southern district at Dane-street, and the other for the northern district, at St. Bernard-crescent. In designing these schools, Mr. Chesser has followed the rule adopted by his predecessor in giving to the buildings a character similar to that of the parent institution,—a bust of George Heriot forming a conspicuous feature in most instances. We cannot say, however, that any of the designs are remarkable for their artistic qualities.

TREATMENT OF THE INTERNAL WALLS OF CHURCHES.

AT the last annual meeting of the Northampton Architectural Society the report said,—"Your committee have given leave to your secretary to make a few remarks on the vexed question of the treatment of internal surface of church-walls. They invited, last year, a discussion on the subject of plaster or no plaster; but, as no one of our members has volunteered to take up either side of the subject, the following few remarks are offered, not by the whole committee, but they agree with what your secretary believes to be the opinion of a large majority of its members. Without travelling beyond the boundaries of our own county, we may find churches in abundance,—in the restoration of which very liberal sums of money have been expended, many portions of which have been admirably restored, whose windows are richly adorned with colour, and where there is enrichment in wood and stone and metal, but whose wall-surfaces resemble the rudest barn or stable. It is said by the advocates of this treatment that there is no concealment of the real construction of the walling; that the varied colour of stone is far more picturesque, and warmer, than plaster; and that the original builders did not intend to lay on thick coverings of mortar, such as are now commonly adopted. It is not strange that persons can see nothing to admire in a large unbroken surface of plaster, which is commonly poor and meagre to a degree. It is not, perhaps, strange that there should be a strong re-action against that universal face of whitewash which, thirty years ago, covered wall-surface and stone-dressings alike of all interiors; but surely uniformity of whitewash may be departed from without adopting in the most precious, and commonly the most costly of buildings, a treatment which we do not tolerate in the meanest cottage. Plaster does not always mean concealment, and plaster invites ornamentation of colour and design, which are not possible in rough wall. And the picturesque in design and the warm in colour may be obtained by some other treatment than the rude and barbarous. Some large town churches might be mentioned, at no great distance, in which the interior walling is treated exactly in the same manner as an exterior wall—the same pointing to keep out the rain where rain can never come (almost as great a want of truth as some attribute to plaster); the external wall neatly and fairly dressed, and laid in even, closely-jointed courses of selected stone, and the internal walls of the rudest unharmonised material, laid window-ways, with large open joints, and apparently with a designed roughness, the better to hold the thin coating of prepared plaster, to which decoration was almost universally applied. A quotation may be permitted here from a paper printed in the last number of the 'Associated Volume,' and read before the Lincoln Society by Mr. G. G. Scott. He says:—'There are some principles common to all periods of art which modern architects, in mere caprice, or in fretful striving after novelty, sometimes venture to depart from. Ever since civilisation commenced, it has been the rule to finish the interior of a building with all possible care. Every ancient building, whether of Egyptian, Greek, Roman, or Mediæval times, was carefully faced internally with wrought stone or plaster, and decorated in colour, or it might be encrusted with marbles or mosaic. The notion of leaving the interior of the building as rough and rugged as an exterior generally must be and has been from a very early date abandoned by civilised man. It has now been revived. The

fashion to which ignorance and necessity obliged our rude forefathers is now adopted by many of us by choice. This queer reaction against modern refinement would perhaps be intelligible, as a mere reaction, if it were not, oddly enough, confined to church architecture. It is very difficult to see why the interior of a church should be made, as it often is, to resemble an ancient cairn or a modern grotto. We see new churches, whose interiors are faced with rough stock brickwork, relieved, perhaps, with lines of red and black, after the manner of the so-called Turkish baths; and others where the rudest rubble is pointed with the blackest of artificial mortar, ingeniously combining the harshness of barbarism with the disingenuousness of civilisation. It is a duty to protest against making our churches the field for the exhibition of such vagaries. Let those who, satiated with feeble refinement, can find no relief but in still weaker affectation of barbarism, confine their tastes to their own drawing-rooms. Let them build their own rooms with rough bricks or uncovered rubble, if they like it, but let our churches be spared. Unfortunately, the evil is not confined to new buildings. Numbers of fine old churches have been stripped internally, and reduced to a nakedness compared with which Puritan whitewash is decency. It is true that among ourselves decorative art in the treatment of church walls is far from being in an advanced state, and among those who have not studied the use of colours there is often a strong prejudice against it; but it cannot be doubted that there is a growing appreciation of mural ornament.' Your Secretary had the opportunity, not long since, of inspecting two experiments of different treatments of church interiors in a western county, which seemed very effective, and he may be permitted to read here an account of the two experiments as they are given in an appendix to a very able paper on the treatment of the inner face of a church wall, written by an old friend, the Rev. W. T. A. Radford, the rector of Downe St. Mary, and under whose auspices both experiments have been conducted:—'Since this paper was written I have been intimately connected with the restoration of two churches, both under the direction of Mr. Gould, as architect. In both cases an attempt has been made to treat the inner faces of the walls in a manner that is unmistakably inside and not outside work, although the materials, used in the two, are widely different, the one from the other. I will say a few words on each. 1. At Winkley, Mr. Gould, after having seen the effect of Sgraffito plastering, when tried on a small scale by Mr. Vickery, the clerk of the works, at once adopted it, as most suitable to his purpose, painting being impracticable within the time prescribed. The process is briefly as follows:—First, mix with the mortar some colouring substance of the tint desired for the pattern of your design; then apply a thin coat of the tinted mortar to the surface of the wall; next, when this coat is nearly dry, apply on it another coat similarly prepared, but of the colour intended for the grounding, and then, having prepared a mould in zinc of the exact outline of the pattern, apply this mould to the wall, mark round its outer edge, and, finally, with a sharp tool, cut away so much of the upper coat of plaster as comes within the pattern, down to the face of the lower coat. By carefully ranging your pattern, you may, by this method, employ a considerable variety of colouring, or you may even apply three successive coats of different colours, cutting through, sometimes one coat, sometimes two, as you wish to exhibit the colour of the intermediate or of the lowest coat respectively. The result is really bold and effective; and, although Sgraffito work is, of course, very inferior to a well-painted wall, still it is, on the other hand, a vast improvement on unrelieved plaster, all of one colour. It has, moreover, two very strong points to recommend it. First, its safety, on account of the colour permeating the whole of each coat of plaster, from any serious injury from scaling; secondly, its comparative cheapness, which would bring it within the reach of many to whom painting would be an impossibility; besides, painting cannot be successfully applied to freshly-built walls, so that even in cases where hopes are entertained of ultimately using paint, Sgraffito, would offer a most convenient present resource, for it could easily be so arranged as to be sufficient greatly to relieve the monotony of same-coloured mortar for the present, and yet to leave large spaces for painting hereafter. 2. The work on the new south wall of Downe St. Mary is of an altogether different character. Here we have endeavoured to arrange the facing-stones themselves of the inner surface of the wall in a pattern that shall satisfy the specific requirements of wall, as distinct from floor treatment. We did not attempt that kind of merely surface ornamentation, so prevalent at All Saints, Margaret-street, which, however costly and beautiful in itself, would be as suitable for a floor as for a wall surface. Our object was not to gain a little artistic effect, by introducing here and there a mere patch of mosaic face-work, which, obviously, could not be structural, but rather to produce a continuous pattern on the wall, such as would satisfy an observer, at a glance, that it was a legitimate part and parcel of a vertical surface.' If large quotations have thus been made from others, it is because one has expressed in a very able manner the views on this subject held by many of your committee; and the other suggests very effective alterations from the rudeness of a bare wall. It is well known that there are architects of repute, who commonly recommend the course which is here deprecated; but it would seem that, having alone the question what is the best mode of ornamentation in itself, or as applicable to this or that style of building, there must be 'some definite principles, which should regulate the treatment of the insides of our church walls, as distinct from that which is suitable to their outer faces.'"

In a discussion of the matter which occurred on another occasion, Sir Henry Dryden remarked with reference to the subject of plastering that he agreed with the secretary and the committee on certain points. He thought if a man built a rubble wall in a new church, it was allowable for him to plaster it. But he protested against plastering old walls, as by so doing they obliterated the history of the building. In St. Sepulchre's Church a great deal of history was obliterated by its being plastered. So in Kingsthorpe Church, if he recollected aright.

With reference to the use of the method of plastering mentioned by the secretary, Mr. Law saw some difficulties in its practical adaptation. He thought the layers of different coloured plaster would be liable to interfusion. The pointing of the inside of a church was ridiculous. He should never think of building a new church with stone on the inside, unless ashlar work. He wished the society would take up the question of colouring. It would have the effect of filling churches if the walls were covered with a warm colouring.

Sir H. Dryden said if he could draw people into church with colouring, he was the cleverest fellow out.

GLASGOW INSTITUTE OF ARCHITECTS.

At a special general meeting of the members of the Glasgow Institute of Architects held within the office of Mr. William MacLean, the secretary, St. Vincent-street,—Mr. John Baird, I.A., in the chair, the following gentlemen were admitted as members of the Institute, namely:—Messrs. Alex. Petrie, 141, West George-street; James A. Knox, 32, West George-street; D. M'Naughtan, 178, St. Vincent-street; J. S. Carmichael, 209, St. Vincent-street; J. L. Cowan, 103, West Regent-street; John L. Bruce, 103, West Regent-street; David Sturrock, 103, West Regent-street; and Andrew Myles, 99, Bath-street.

An interesting feature of the meeting was the distribution of the "Stevenson" prizes. These prizes, amounting to 22*l.* 10s., were offered by Mr. J. J. Stevenson, I.A., of London (late of Glasgow), a member of the Institute, for the first, second, and third best series of measured drawings and illustrative sketches from any secular or religious edifice in Scotland erected prior to the eighteenth century, being the original production of the competitor from measurements taken on the spot, assistants or pupils in the offices of members of the Institute being alone eligible to compete. Mr. Stevenson's object in offering these prizes has been to encourage and promote the study of old work, as the best possible means of acquiring the knowledge necessary to design good new work. Several very fine sets of drawings were submitted in response to the invitation, but the number of sets of drawings submitted was anything but creditable to the spirit and professional enthusiasm of those invited to compete, or encouraging to the gentleman who so liberally offered the prizes. Amongst other subjects illustrated are New Abbey, Kirkcudbrightshire; St. Magnus's Cathedral, Kirkwall; and Linlithgow Church The committee appointed by the council to award the prizes were the president (Mr. John Baird), Mr. John Burnet, and Mr. John Honeyman,—Mr. Burnet, convener. This committee reported that, after a very careful examination of the drawings the committee decided that the set of drawings of New Abbey, Kirkcudbrightshire, by Mr. G. W. Browne, was worthy of the first prize; that of the Linlithgow Church, by Mr. William Millar, of the second prize; that of St. Magnus's Cathedral, Kirkwall, by Mr. W. H. Ross, of the third prize; and that the next in merit was the set of drawings of St. Kentigern, at Lanark, by Mr. R. Browne. All were of a fair order, while the New Abbey set were of a very high order, evidencing a fine appreciation on the part of the artist of the beautiful subject he had taken in hand to illustrate. The committee also recommended that a set of drawings by Mr. William Ferguson, which, being insufficient in number, they had been obliged to throw out of the competition solely on the ground of his non-compliance with the stipulations, be awarded an extra prize of 5*l.*, as but for the non-compliance with stipulations, these drawings would be entitled to rank with the first-prize set. The President then handed the various prizes to the successful competitors, accompanying each presentation with a few well-chosen sentences. The prizes were awarded as follow:—1st prize, 10*l.*, Mr. G. W. Browne, in the office of Messrs. Campbell-Douglas & Sellars; 2nd prize, 7*l.* 10s., Mr. William Millar, in the office of Messrs. Campbell-Douglas & Sellars; 3rd prize, 5*l.*, Mr. Wm. Ross, in the office of Mr. William Leiper; and the extra prize of 5*l.* to Mr. William Ferguson, in the office of Messrs. Campbell-Douglas & Sellers. The President then intimated that the Institute had determined to offer a silver medal for competition annually, and hoped that the young men, for whose improvement and benefit the prize was offered, would see it to be for their advantage to take part in the competitions.

THE SANITARY CONDITION OF DUNDEE.

WHOLESALE MANURE MANUFACTURE.

Some startling facts relating to the sanitary condition of Dundee have just been brought to light by the publication of a report by Mr. Brownlee, the recently-appointed convener, or chairman, of the Sanitary Committee of the Dundee Police Commission. After noticing at length the operations for the cleansing of the town, and describing the duties performed by the officers of public health, the report proceeds to deal with the actual state of matters. Mr. Brownlee has made a personal inspection over a considerable portion of the town, and his report is accompanied by suggestions for improvements by "a practical builder," who is master of all the details to which he refers. "I cannot help thinking," says Mr. Brownlee, "that of late years the sanitary committee has in a great measure lost sight of the primary object of its existence, viz., the cleanliness and health of the town, and that, instead, it has been too intent on the turning of the town into a vast manufactory for the production of manure, with a view to the raising of revenue. In hundreds of instances there are to be found large ashpits, with privies conjoined, within a few feet of dwelling-houses, where all the excrement of a score and upwards of families, and the refuse from their houses are deposited, and allowed to ferment for nearly a fortnight before being cleaned out, the only attention they receive in the interval being the laying down of a deposit of mill-dust for the purpose previously mentioned. As illustrating the gigantic extent to which this manure manufacture has been carried, I may mention that last year upwards of 3,000 tons of mill-dust, and about 1,000 tons of tan refuse were used for mixing, at a cost of 1,870*l.*, exclusive of labour and cartage connected therewith. I doubt, indeed, even the money profit of such an expenditure. It does appear to me that the impropriety, not to say the absurdity, of such a system, having cleanliness professedly for its object, requires only to be pointed out to be apparent to every one. No consideration that I can think of can justify to my mind its continuance."

Among others the following practical suggestions for improvement are made:—That ash-pits and privies of all kinds should be placed as far as possible from dwelling-houses, and that all

common privies should have a pan for each seat. That where there are not water-closets in each house the ash-pits and privies be cleaned out once in every two days. That such ash-pits should be constructed of flags or other imporous materials, perfectly smooth on all the exposed surfaces, the bottom to be at the level of the footpath adjoining; to have three sides say 18 in. high, the bottom to slope 3 in. from the open side; to have a grating inserted in the side at the lowest point through which the liquid may flow into a gully grating placed immediately outside; and to be of a size to hold not more than three days' refuse; the privy to be drained either into the ashpit, or direct into the gully grating. The whole to be screened off from the view of the windows by a wall or wooden fence. That a stand-pipe for a water-hose be placed in connexion with each such ash-pit for the purpose of washing away all impurities from the ash-pit and privy and their surroundings and accesses. That all closes, courts, and passages which are liable to get into a dirty state be laid with imporous pavement, keeping in view the free use of water for cleaning. That all soil-pipes and rain-water conductors in back courts be connected directly with the drains, and that each dwelling-house have a sink properly trapped and provided with water. That the soil-pipes of all sinks and water-closets be carried up to the eaves of the houses well away from windows, and left open at the top; where such soil-pipes are inside of the houses, to be carried through the roof, also well away from the windows. It is suggested also that in new buildings all water-closets used by more than one family have a window in the exterior wall; when used by only one family may be inside, but should have a ventilating shaft of not less than 2 ft., and open from bottom to top of building. All man-holes, it is recommended, should be perforated, and all gullies left untrapped for the free ventilation of the sewers, except in localities where any special smell exists. All house-drains should be formed of fire-clay pipes of not less than 6 in. in diameter, having a spigot and faucet joints, jointed with Portland cement and laid with a gradient of not less than 1 in. to 3 ft., all openings in confined places to be trapped. All single-roomed and the inferior class of two-roomed houses should be ventilated into the flue with a syphon ventilator; and all new tenements of dwelling-houses with a less space behind than 40 ft. should have water-closets. The report is receiving the attention of the Sanitary Committee and the Police Commission.

COST AND ACCOMMODATION OF LONDON SCHOOL-BOARD SCHOOLS.

THE Works Committee have lately laid before the Board the following table, which may be usefully recorded. The committee say in their report,—"It will be seen that in some cases the extras on the contract exceed the additional 10 per cent. of the contract amount authorised by the Board on the 6th of November, 1872. In many cases, however, it has been impossible to avoid this excess, which is owing to various causes. In some cases extra foundations have been rendered necessary by the nature of the soil; in other cases the Education Department or the district surveyor has required alterations to be made in the structure of the building; and it has sometimes been found advisable to carry out alterations or improvements to the school during the progress of the works, the cost of which could not be ascertained till the work was measured up and the builder's accounts closed." The following table shows in each case where the extras on the contract exceed the expenditure sanctioned by the Board:—

Accommodation.	Name of School.	Expenditure authorised by Board.	Extras authorised by Committee.	Cost per Child.
	CHELSEA.	£. s. d.	£. s. d.	£. s. d.
767	Harwood-road, Fulham (Basil Champneys)	5,285 0 0	529 2 5	7 11 7
1116	Wornington-rd. North Kensington (Bd. Architect)	7,495 0 0	113 11 9*	6 16 4
	FINSBURY.			
1212	Winchester-street, Pentonville (Charles Barry)...	9,328 0 0	984 8 8	8 10 2
841	Central-street, St. Luke's (Board Architect) ...	5,919 0 0	607 8 10	7 15 2
486	Hornsey-road (Board Architect).....	2,449 0 0	109 8 7	5 5 3
	GREENWICH.			
775	Hughes's-fields, Deptford (Board Architect).....	5,850 0 0	432 8 7	8 2 1
585	Grove-road, Forest-hill (H. Saxon Snell)	5,395 0 0	349 1 0	9 16 4
	HACKNEY.			
1122	London-fields, South Hackney (Board Architect)	7,172 0 0	315 18 1	6 13 5
1100	Olga-st., Bethnal-green (Hammack & Lambert)	6,828 0 0	1,895 17 2	7 18 7
1105	Globe-terrace, Bethnal-green (Board Architect)	7,178 0 0	694 3 10	7 2 5
1190	Maidstone-st., Haggerston (Mileham & Kennedy)	7,193 0 0	1,380 11 7½	7 4 1
587	Newcastle-st., Bethnal-green (Board Architect)	4,920 0 0	826 18 6	9 15 9
1139	Hammond-square, Hoxton (Board Architect) ...	6,144 0 0	23 3 11	5 8 3
	LAMBETH.			
794	Johanna-street, Lambeth (Board Architect).. ...	6,740 0 0	1,235 7 7	10 0 10
1164	Harper-street, New Kent-road (R. W. Edis).....	6,861 0 0	645 16 5	6 8 10
1086	Westmoreland-road, Walworth (Jarvis & Son)...	8,740 10 0	666 3 0	8 13 2
590	James-street, Camberwell (Board Architect) ...	4,962 0 0	748 0 7	9 13 6
959	Canterbury-road, Camberwell (Board Architect)	7,622 0 0	459 13 3†	8 8 9
1055	Lower Wandsworth-road (Board Architect)	7,549 0 0	[392 6 7	7 10 6
589	Bolingbroke-road, Battersea (J. W. Walton).....	5,370 0 0	377 1 8	9 15 1
906	Battersea Park (W. G. Coldwells)	6,728 0 0	557 4 1	8 0 9
	MARYLEBONE.			
1129	Mansfield-place, Kentish-town (Board Architect)	9,556 0 0	431 9 11	8 16 11
758	Hawley-crescent (Board Architect)	7,180 0 0	718 12 0	10 8 4
534	George-street, Lisson-grove (Board Architect)...	4,790 0 0	383 9 1	9 13 9
816	Bell-street, Edgware-road (Board Architect) ...	6,726 18 2	—	8 4 10
	SOUTHWARK.			
809	Orange-street, Borough (Board Architect)	5,814 9 1‡	457 16 1	7 15 0
769	Russell-street, Bermondsey (J. James)	5,280 0 0	908 13 9	8 0 11
1078	Jamaica-level (Board Architect).....	7,297 0 0	592 4 11	7 6 4
	TOWER HAMLETS.			
1051	Gloucester-street, Stepney (Lee Bros. & Pain)...	8,371 0 0	926 12 7	8 16 11
933	British-street, Millwall (R. Phené Spiers)	6,070 0 0	596 0 4	7 2 10
1145	Essex-street, Stepney (A. G. Hennell)	6,361 12 0	716 14 3	6 3 7
933	South-grove, Mile-end-road (Board Architect)...	7,368 0 0	225 11 2	8 2 9
377	Northey-street Graded School (Board Architect)	3,210 0 0	337 6 8	9 8 2

* This amount does not include the cost of erecting teachers' rooms.
† This amount does not include the cost of the additions to the caretaker's apartments now being carried out.
‡ This amount includes 614*l.* 9*s.* 1*d.*, sanctioned by the Board for extra foundations.

ROCK ASPHALTE AND CONCRETE IN THEIR APPLICATION TO ROAD-MAKING AND BUILDING.*

IN handing in the title of the subject, I fear hat for the moment I did not appreciate the full extent of the ground which such a title covers. To argue the theory and practice of working in cement in its various qualities and methods of manipulation, would be to enter upon a topic of almost undefined extent; so with your good leave I will refer to concrete only incidentally, and make the subject of this paper "Road-making," having special reference to rock asphalte as applicable thereto.

Asphalte, as commonly referred to, is generally understood to mean a rough mixture of broken brick, cinders, gravel or grit, with common tar or pitch. This composition has for many years past been frequently used in the construction of footwalks in quiet neighbourhoods, and even sometimes in roadways where the traffic has been very light. It has, however, never been anything like generally used; for although it presents a pleasing effect when first laid down,—especially when sprinkled with limestone chippings or other bright facing,—a very small amount of wear disturbs the surface and causes speedy failure.

I believe the cause of this early disintegration to lie in the natural principle, that no loose hard material may remain long distributed among any material of a softer nature. Every tread upon a paving of Common asphalte tends to force away the soft material from between the pieces of the hard material, and the effect of this is to leave the hard material less and less perfectly cemented. Moreover, the soft material is readily affected by the heat of the sun, and "comes" and "goes" with each variation of temperature, the effect of which is to reduce its adhesive qualities; for although the heat of the sun is sufficient to loosen, it is not sufficient to quicken and fuse the bituminous particles together again.

Again, not only sand and grit, but particles of common loam and earth, are by the effect of traffic thereupon gradually pressed and worn into the mass, which soon tells with adverse effect upon the quality of the paving. It is well known that the introduction of earthy particles are deleterious to, and detract from, the coherence of any cementing material. In the case of mortar and other quick-setting cements, of course no such adulteration can be effected after they are once hard; but in the case of a cementing substance which never properly hardens, and the very purpose of which is to be trodden upon, such adulteration is perpetual and inevitable, and equally inevitable is its rapid deterioration. In this way may be accounted for the disappointment so commonly experienced in a paving which at first appears so sound and beautiful, but which so soon becomes disintegrate and unsatisfactory. The quality of asphalte to which I make special reference, is that prepared for use by nature herself, which is quarried or got from the mine, and which is as superior to the common asphalte just referred to as a piece of fine marble is in grain to the grain of the coarsest piece of sandstone: it is called rock asphalte. This asphalte is a natural combination of limestone and bitumen. The saturation of the limestone is so perfect, that separation of the two materials cannot be effected, nor by any artificial means can so complete a combination be produced. The proportions of the materials are generally about 92 to 93 parts of lime to 7 to 8 parts of bitumen, with traces of silica or other calcareous substance.

Limestone being developed from deposits of organic matter which in ages past have accumuloted in fissures and hollows in the surface of the earth, it is supposed that when such organic matter has become heated during a certain stage of the process of decay, and when it has remained for a lengthened period at a certain high degree of heat, a vapour has been generated which, when confined and unable to escape, has ultimately condensed as bitumen in the mass in which it originated. Considerable deposits of this material are known to exist in many parts of the world; but the mines from which supplies of the best material are obtained are the Limmer Mines near the city of Hanover, and the Virwohle Mines in the Duchy of Brunswick, Germany, and from the Val-de-Travers and Seyssel Mines in Switzerland. The material as got from the

* From a paper by Mr. Edward Guthrie, read before the members of the Liverpool Architectural Society.

mines is of a brownish black colour. Where the mines are worked in underground galleries, where the temperature is even—as is the case of the Challenge and Chavorocho Mines—the material is got regularly in a loose earthy condition; but when the mines are open and exposed to the influence of the sun the case is different. It can then be only worked in the cool of the morning and evening, when it is comparatively brittle, for under the heat of the sun the rock becomes so elastic as to be exceedingly difficult to separate.

The use of Rock Asphalte, according to antiquaries, appears to have been known to the ancients, for evidences of its having been used in building are said to exist among the great ruins of Egypt and Assyria, but in modern times it is only very recently that it has become at all generally known or largely applied. During the last century the material was to some extent introduced, but not until within the last thirty or forty years has any considerable use been made of it. In 1838 it was used for the first time in Paris, in the paving of a street. Since then it has been largely adopted for that purpose in many other large Continental towns, including Berlin, St. Petersburg, Moscow, Riga, and Copenhagen; and very lately, but not till very lately, it has been used in London and other large English towns as a paving. Besides for general paving purposes, it is a material capable of being used with great advantage either alone or in conjunction with cement concrete, in place of slates and lead in roofing, in the construction and lining of reservoirs, cisterns, damp courses, and in sanitary arrangements generally. And while thus (although only incidentally) referring to sanitary arrangements, I cannot let the occasion pass without earnestly urging the attention of this meeting to the facilities which rock asphalte affords for the cutting off of all direct communication between the islands of buildings and the drains. A more unsafe and insanitary arrangement than the introduction of drains to the insides of houses could not well be designed, and with architects rests the practical application of all reforms in this direction. Drains are pipes charged in a greater or less degree with poisonous vapours active for the spread of disease and death, and ever waiting to escape by the slightest imperfection therein, through the various traps laid either in the cellar floors or to the sinks and closets. By the present system of laying cellar floors with brick on edge, tiles, or inferior flagging, it is perhaps almost a necessity to introduce a drain to carry away the moisture which would otherwise accumulate in the lines of the floor, and there stagnate. By the proper application of asphalte all necessity for the introduction of the drains into the house may be removed.

In the building of a house, and after carrying the foundation up to the level of the cellar-floors, an inch or ½-inch layer of rock asphalte should be spread over the whole surface, simultaneously forming the final flooring of the cellars and the damp coursing of the walls; and as the outside walls are carried up, the asphalte should be turned and carried up the outside of such walls to the level of the ground line, forming a perfectly waterproof skin to the whole basement. All washing and other waste water should be carried by a pipe into an outside area in the open air, and should enter the drain by a trap there, which should be as far away as possible from any opening into the house. I would not only suggest that this sanitary arrangement should be made compulsory in the matter of cellar drainage, but would also advise its compulsory application to all upstair sinks and closets, obliging all drainage matter from any source within the house to be conveyed into a trough in the open air before entering the drain, so that no direct communication between the insides of dwellings and the drains should exist.

Now, with respect to street paving: I will assume it to be admitted on all sides that for footwalks a half-inch or five-eighths layer of rock asphalte upon a 3-in. or 4-in. layer of Portland cement concrete is superior to flags, tiles, or any other quality of footwalk pavement; and now that the cost of asphalting and flagging are about equal, I believe that the general adoption of asphalting in place of flagging is but a matter of time and emergency. . . . . .

Wood stands next as a high-class paving. Only in one point,—that of foothold,—does it stand superior to asphalte; but on this account alone it threatens to compete very seriously with the otherwise infinitely better material. Observations have been made and records kept which prove that in all states of the weather other than greasy, the number of falls upon asphalted roads is fewer even than upon granite sets, and it is obvious that a fall upon a smooth asphalted road, when it does occur, must be less injurious to the horse than a fall upon a rough and stony one. The difficulty, however, of rising from the asphalte after a fall is very great. . . . I have from time to time given considerable thought to the end of attaining the desired object; and since I, a month ago, submitted the title of this paper, I have designed and registered a system of paving, a model of which is before you. I take short pieces of lathwood, which, having been first saturated in a preservative of liquor, I pass through a vessel containing rock or other asphalte in a molten and mastic state, and simply place such pieces of wood, with a small portion of the asphalte adhering to each piece, on their ends or edges upon the prepared surface of the ground to be covered, in such a position that they lean upon each other at any angle other than a right angle to the ground covered, and thus let them cool to a solid amalgamate mass, the ends or edges of the laths, closely packed with the hardened asphalte, forming the surface of the road. The road may be rolled, if desired, for fuller assurance of solidity, or for the purpose of giving a dressing to the surface; and I here call particular attention to one of the special features of its construction, that is, the angle at which the wood used lies. It is obvious that a paving so constructed, the more it is run upon the heavier the weights which pass over it, the more and more consolidated it must become, and that a road so constructed must have great durability.

THE INSTITUTION OF CIVIL ENGINEERS

THE fifty-seventh annual meeting was held on the 22nd of December, Mr. Thos. E. Harrison, the president, in the chair.

The Report referred in the first instance to the numerous and increasing applications for admission, and to the desire of many candidates to be at once recommended for election as Members. On this point the opinion was expressed that any relaxation in the stringency of the bye-laws and regulations, which were quoted, would be inexpedient. When the rules were first framed, it was anticipated that Associates might, subsequently to their election, become qualified for Members, and provision was accordingly made for their transfer. During the past session the Council had had the pleasure to raise twenty-three Associates to the class of Members. Of the new candidates twenty-three were elected Members, while out of the 170 who were passed as Associates, five declined or failed to complete their elections. Some dissatisfaction had been expressed with the present definition of the class of Associates; and there was reason to believe that many young professional men, not yet fully qualified for the rank of Member, thought it a hardship that they should be called by a name which did not imply full fellowship, and should be classed with persons "not necessarily Engineers." It might, therefore, be open for consideration whether some modification could not be devised, which, while retaining an honourable distinction for the more experienced members, would yet afford a just recognition of the position of their younger brethren.

In the past twelve months there had been an effective addition of twenty-six Members and of 110 Associates, thirty-nine of the latter having previously been Students. The numbers of the three classes now composing the Corporation were fifteen Honorary Members, 792 Members, 1,323 Associates, together 2,130 of all grades, as against 1,994 at the same date last year. During the last five years the accessions had been 34 per cent. nearly; but in that period the Members had only increased 21 per cent., while the increase of Associates had been 44 per cent.

An analysis of the financial statement attached to the Report showed, that the subscriptions alone, with dividends on Institution investments, forming the income proper, amounted to 7,310*l.* 13s.; that the Telford, Manby, Miller, and Howard Trust Funds realised 447*l.* 17s. 5d.; and that the life compositions, the admission and building fund fees, and a further small sum from the residuary estate of Mr. Telford, all which were treated as capital, and invested accordingly,—produced 1,931*l.* 7s. 2d. Certain miscellaneous items, yielding together 301*l.* 17s. 11d., had not been included in the revenue named, as they were in the nature of set-offs to expenditure. After allowing for these, as well as for the outlay on account of premiums under trust, 240*l.* 9s. 8d., the net expenditure became 6,488*l.* 1s. 4d. A sum of 2,997*l.* 10s. 11d. had been placed in Three per cent. Annuities, on account of the Telford and Miller Trust Funds, and 2,805*l.* 18s. 2d. in Four per cent. Debenture Stocks in several railway companies, on the general account. The Funds now belonging to, or under the charge of, the Corporation, amounted to 33,158*l.* 13s. 4d., as compared with 30,223*l.* 8s. 6d. at the date of the last report. Of these Funds a sum of 11,968*l.* 7s. 8d. was in Government Stocks, and 20,950*l.* stood in nearly equal proportions in guaranteed stocks of seven of the principal railway companies. The investments yielded an average rate of interest of 3¾ per cent.

It was remarked that, to represent the ever-widening fields of industries now flourishing, many of them undreamt of in the days of our founders, various societies had from time to time been established for the study of special branches of engineering science and practice. The existence of these societies, each occupying different ground, furnished significant evidence of the growth of the profession. The Council had felt it a duty to aid them, by granting the use of the rooms for their meetings, and by any other friendly offices; but, at no very distant time, the question might arise, whether some plan could not be devised by which there should be a still closer tie between these societies and the oldest association connected with the profession,—the Institution of Civil Engineers.

The following gentlemen were elected to fill the several offices in the Council for the ensuing year:—Thomas Elliot Harrison, President; William Henry Barlow, John Frederic Bateman, George Willoughby Hemans, and George Robert Stephenson, Vice-Presidents; James Abernethy, Sir William George Armstrong, C.B., Sir Joseph William Bazalgette, C.B., George Berkley, Frederick Joseph Bramwell, George Barclay Bruce, James Brunlees, Sir John Coode, William Pole, C. William Siemens, Sir Joseph Whitworth, Bart., and Edward Woods, Members; and Major J. U. Bateman-Champain, R.E., John Head, and Colonel Charles Pasley, R.E., Associates.

CONCRETE BUILDING IN WATER.

IN the course of a paper read at a recent meeting of the Institution of Civil Engineers, on "The New South Breakwater at Aberdeen," by Mr. William Dyce Cay, C.E., the system of building with liquid concrete deposited *in situ* above low-water level was described. A framework of posts was erected round the space intended to be filled, excepting at the end of the completed work, which formed one side of the case. These posts had grooves in their sides, with sliding panels, extending from post to post. The bottom and sides of the case were lined with jute-bagging, and tie-rods, extending through the posts and from side to side, prevented the case from being burst open by the lateral pressure of the liquid concrete. In executing the concrete building *in situ* above low-water level, it was considered important to exclude the tide from the unset concrete. To effect this, the cases were arranged of such a size that, by commencing when the tide left the foundation of the piece, the concrete could be filled into the case faster than the tide rose, so that its surface was always above the level of the sea outside the case. To hasten the work, concrete blocks were sometimes incorporated with the liquid concrete. The contents of the cases in 1872 and in 1873 varied in weight from 335 tons to 1,300 tons. The proportions of the concrete found best for this work, keeping in view the risks from storms had been one of cement to three of sand and four of gravel. Bags of concrete, containing 100 tons each, were deposited in the apron after the other parts of the building had been erected, by fixing a large timber-box on brackets overhanging the site where the bag was to be discharged. The inside dimensions of the box were 32 ft. 1 in. by 8 ft. 1 in. by 6 ft. deep; and the 100-ton concrete-bag was filled in the same manner as the bags in the small skips. When full, the bottom of the box, which opened on hinges placed at one side, was let go by pulling two triggers which held up the other side of the bottom, and the bag of concrete was dropped into the site excavated for it, close to the toe of the foundations of the breakwater. The outer end of the breakwater had been secured against the sea by dovetailing the concrete blocks into one another, and by erecting a tower of concrete,

20 ft. high, on the end to add weight to it. The diving work had all been executed with the helmet apparatus; there were generally twelve divers under water at one time, and four shifts of diving work of four hours each were obtained per day in summer. A description was then given of the concrete blocks and the machinery for making them, with particulars as to the concrete mixing and the cement used. The proportions of the materials were one of cement to four of sand and five of gravel. With respect to progress and cost, it appeared that, from the time the machinery was fairly at work, about 300 lineal feet had been completed per annum, and that, taking into account the value of the plant now being used on another of the Aberdeen Harbour works, the cost had not exceeded the estimate. The total length of the breakwater was 1,050 ft., and on this 76,443*l.* had been expended. In conclusion, the opinion was expressed that concrete blocks of the ordinary size of from 10 tons to 20 tons each were not suitable for building a solid breakwater on sand or other soft material, and it was recommended that the parts of such a work below low water should be in blocks of from 100 tons to 200 tons weight each, and that some of these blocks might, with economy and advantage, be deposited in a liquid state in bags.

CONCRETE *v.* BRICKWORK.

THE following tenders have been received for stabling, &c., at Greenwich, for Messrs. J. Lovibond & Sons. Mr. J. Kiddle, Jun., architect. Quantities by Messrs. Batterbury & Huxley:—

	In Concrete.	In Brickwork.
Adey	£4,484 0 0	£4,867 3 0
Drake	3,448 0 0	3,918 0 0
Kirk & Co.	3,430 0 0	3,530 0 0
Manley & Rogers	—	3,480 0 0
Jerrard	3,326 0 0	3,349 0 0
Newman & Mann	3,496 0 0	3,220 0 0

This list is worth a little cogitation. It serves to show the difficulty with which an architect can pronounce as to the probable cost of a building, or by what sort of construction money may be saved. While one firm states that if concrete be used 470*l.* will be saved, another says it will cost 270*l.* more than brickwork, and, moreover, offers to build the house in the latter material for 220*l.* less than the firm who shows the saving produced by the use of concrete can execute it in concrete.

SANITARY CONDITION OF WARRINGTON.

IT is gratifying to find that Warrington continues free from serious epidemic disease, although it is so general all round. Not only has fever been very rife in places noted for neglect of sanitary arrangements, says our authority, the *Warrington Guardian*, but in some where natural position and sanitary care have, to a more than average degree, combined to promote good health, though doubtless with some real, though not overt neglect, as the connexion between epidemic disease and neglect in some form is now too well known for it to be supposed this curse could ever come causeless. It is remarkable that Warrington, in its lowest parts lying little above high-water mark, and on the banks of a very filthy river, has escaped the prevailing autumnal scourges.

It may be as well to note, however, that Warrington is not yet perfect in some of its arrangements for the health and comfort of its people. Unfortunately a good number of its houses are below the level of the highest tides in the river, and whenever high tides happen during a rainy period, and sometimes even when the fresh water is low, there is a back stream up the sewers, and these low-lying houses are flooded by sewer water. Whilst this wash of the tide up the sewer continues, the higher part of the town is really pouring its sewage into the cellars of the lowest houses, and a state of things is brought about that is highly dangerous. It is not difficult to realise both the nuisance and the danger when it is remembered that the receding flood leaves on the low kitchens and cellars of many houses a muddy deposit of the most unpleasant character. It is not the old and ill-planned houses alone that are subject to this dangerous periodic infliction, but also the new and more carefully-built houses.

Is this really unavoidable? The Borough Engineer would, if allowed, no doubt soon devise a remedy. And although it is hoped a scheme for the permanent diversion from the river and the utilisation of the town's sewage will not long be deferred, the low-lying parts of the town might be delivered from the danger at once.

SEWERAGE OF BUNTINGFORD, HERTS.

THE Buntingford sanitary authority, some time back, advertised for, and obtained from various engineers, competitive schemes for the sewerage of the town and disposal of the sewage, and, after the usual time spent in deliberation, decided upon one submitted by Messrs. Smith & Austin, sanitary engineers, of Hertford. Working drawings have since been prepared, and sanction was obtained from the Local Government Board for a loan of 1,600*l.*, the estimated cost of the works. Delay in the progress of the scheme has been occasioned by the difficulty experienced in obtaining the only piece of suitable land on which the sewage could be carried by gravitation, and the sanitary authority is now applying for a provisional order to take by compulsion six acres of land, the property of Sir Henry Lushington.

The town of Buntingford, being situated upon the river Rib, a tributary of the Lea, is compelled by a special Act to stop the flow of anything not being perfectly pure into the natural watercourses.

It is proposed to resewer the whole of the town with earthenware-pipe sewers, retaining the present sewers for the purpose of carrying away the surface and storm waters; to conduct the sewage by gravitation to land lying several feet above the line of saturation, and,—after passing the sewage through a simple filter and precipitating tank,—to utilise and purify it by surface and downward filtration. We understand the works are to be carried out during the coming spring.

PRIZE FOR ESSAY ON RURAL SANITARY SCIENCE.

A PRIZE of twenty-five guineas is offered by Dr. Lory Marsh, for open competition for the best essay on the following subject:—"The application of Sanitary Science to Rural Districts with a view to insure the highest Condition of Health, and the Prevention of Disease." Each essay to be limited to 25,000 words, and "to be forwarded not later than June 30th, 1875, to Dr. Marsh, 10, Adelphi-terrace, Strand, London, to whom the copyright of the successful essay shall belong." Several well-known men have consented to act as adjudicators.

Dr. Marsh asks us to make the offer known, and we willingly do so. At the same time, we must observe that twenty-five guineas can scarcely be regarded as "a prize" in such a competition, or be likely to induce the best men to compete. A competent writer would not have much difficulty, we should think, even in these days, in finding an "enterprising publisher" who would give him 26*l.* 5*s.* for a good essay on the subject named.

If the object be, as we suppose it is, not to make money, or to exercise unfledged essayists, but to obtain a thoroughly good and practically valuable essay, the premium should at least be doubled, or the author of the successful essay should retain the copyright.

THE PREVENTION OF CONTAGIOUS DISEASES.

MR. JOHN LIDDLE, of the Whitechapel District, never fails in his reports as medical officer of health to give information that applies widely. In his last, just published, he says, in speaking of the necessity of employing, to the best of our ability, such means as are known to us, whereby the spreading of contagious diseases will be prevented:—

"Notwithstanding that our knowledge is limited, as to the causes of epidemic diseases, and that we are unable to account for the rise, culmination, and decline of epidemic diseases, and cannot assert with confidence that any one particular agent will effectually destroy contagious matter, we may probably prevent the development of typhoid fever and other epidemic diseases, by the adoption of the following means:—

Firstly. By the practice of cleanliness in our houses and persons. Secondly. By efficient ventilation in our houses, and especially in our bedrooms. Thirdly. By complete drainage, whereby all refuse matter in a fluid state shall be immediately carried away from our habitations. The drains should be so constructed as to prevent the noxious gases which they contain from making their way into our houses. I may here observe that, unless the public sewers and house drains which communicate with them be properly constructed, they may be the means of diffusing the germs of disease, by allowing their contents to soak into the ground, and so contaminate the sources of the water supply; and they may also, through their imperfect construction, diffuse their poisonous emanations through the atmosphere, and thus spread disease among the people. Fourthly. By the local Boards causing *all* the streets to be cleansed daily. This should be done uniformly throughout the metropolis. Fifthly. By the prompt removal of all nuisances from the vicinity of dwelling-houses. Sixthly. By the use of pure drinking-water; and lastly, by so observing the laws of health, as regards the avoidance of overcrowding, by temperance, by proper food, by warm clothing, by exercise in the open air, &c., that the body may be preserved in health, and thereby enabling it to a great extent to resist disease. As the poor cannot, by means of their poverty, carry out in their persons all that is above stated as being necessary to be done to preserve the body in health, it may be expected that they will suffer more from the ravages of an epidemic disease than their richer brethren. I will conclude this part of the subject by reiterating the aphorism, that 'Prevention is better than care'; and that it will be found in every respect more conducive to the welfare of the people to oppose the attack of an epidemic disease by adopting such sanitary means as will prevent the contamination of the water supply, and the pollution of the air, and to preserve the soil in the vicinity of human dwellings from all refuse matter and filth. I say that it would be better to do these things, and not rely on the value of any disinfectant to stay the ravages of disease when it has obtained admission into the houses of the people."

PROPOSED NEW BUILDINGS IN MANCHESTER.

THE VICTORIA-STREET SITE.

THE value of the triangular plot of ground at the junction of Victoria-street and Deansgate, Manchester, was strikingly shown by the price paid to the Corporation by Mr. Andrew Hamilton and some other gentlemen a few weeks ago, the 5,160 square yards realising 288,960*l.*, which was at the rate of 56*l.* per square yard. The old buildings which stood upon it have for the most part been demolished, and a company is being formed to cover the plot with handsome shops and an hotel. The intention of the promoters of the company is to erect a five-storied stone building with double basement, with shops to front Victoria-street, St. Mary's-gate, and Deansgate. There will also be an hotel at the Victoria-street and Deansgate corner; and a large arcade in the centre of the plot consisting of shops. The plans have been prepared by Mr. William Dawes, architect.

The style of the building will be Victorian, with a Gothic treatment of detail adapted to suit modern requirements. The various frontages of the shops will be—to Victoria-street, 368 ft.; to Deansgate, 350 ft.; and to St. Mary's-gate, 220 ft. The hotel will occupy the angle at the corner of Victoria-street and Deansgate, and will form one of the most attractive features of the block. There will be twelve shops with a frontage to Victoria-street, and a similiar number to Deansgate, while the base of the triangle in St. Mary's-gate will be divided into eight. The main height of the building will be about 70 ft.

The space enclosed by the shops and offices will form the arcade, the widest portion of which will be about 70 ft. The height will be 60 ft., and the entire roof will consist of iron and glass. In the centre of the arcade will be a post-office and telegraph station. It is estimated that the cost of the building will be about 140,000*l.*

River Pollution.—It is notified in the *Gazette* that the Queen has appointed Sir John Hawkshaw, knt., one of the honorary councillors of the Institution of Civil Engineers, to be her Majesty's commissioner for the purpose of inquiring as to what towns and places contribute to the pollution of the river Clyde and its tributaries; and how and by what means the sewage of such towns and places, and the refuse arising from industrial processes and manufactures carried on within the same, can be utilised or got rid of, without risk to the public health or serious injury to such processes and manufactures otherwise than by discharge into the river Clyde and its tributaries.

ASSOCIATED CARPENTERS AND JOINERS OF SCOTLAND.

MR. WILLIAM PATERSON, the general secretary, has just issued his report for 1874. There had been an advance of 2s. per week in the wages of nearly all the members. The receipts for the year amount to 6,815*l.* 1s. 5½d., being 953*l.* 11s. increase when compared with last year. There is a balance placed to the credit of the Association of 1,441*l.* 5s. 3½d., which increases the funds in hand to 9,071*l.* 8s. 8½d. Of this sum, 7,554*l.* 5s. 6d. is the property of the trade section, and 1,517*l.* 3s. 2½d. is the property of the sick section. There is a balance added to the sick section of 651*l.* 6s. 7d. There are 774 more members in the Association than there were at this period last year. Appended to the report is a trade census, giving the number of journeymen and apprentices in different districts:—Aberdeen, 435 men, 99 apprentices; Alloa, 76, 24; Arbroath, 76, 21; Blairgowrie, 30, 15; Bridge of Allan and Dunblane, 33, 15; Broughty Ferry, 42, 14; Cupar, 14, 8; Dalkeith, 28, 10; Denny, 18, 12; Dundee, 508, 147; Dunfermline, 114, 52; Edinburgh, 1,444, 219; Elgin, 35, 13; Forfar, 60, 25; Forres, 15, 7; Glasgow, 2,785, 659; Govan, 582, 157; Greenock, 780, 310; Inverness, 90, 60; Kirkaldy, 120, 40; Kirriemuir, 18, 8; Leith, 174, 28; Nairn, 15, 13; Perth, 118, 36; Peterhead, 34, 15; Slamannan, 16, 8; Stirling, 61, 34; Tayport, 20, 9; Wick, 16, 14; Wishaw, 85, 32. The total number in the Association is 11,836 men, 3,310 apprentices.

SANITARY MATTERS.

Ilfracombe.—The increasing popularity of this favourite resort having caused it to outgrow its water supply, the Local Board have called in Mr. E. Appleton, of Torquay, to remodel and enlarge the works.

Newquay, Cornwall.—The Local Board have instructed Mr. E. Appleton to prepare a scheme of drainage, which it is proposed to carry out forthwith.

Shaldon.—The same gentleman has been instructed to report on the drainage of this place.

NEW PUBLIC HALL AT CARSHALTON.

CARSHALTON, though small in extent, has yet taken the initiative in the supply of a need long felt, by the erection of a substantial and commodious public hall, which was inaugurated on the 17th ult. The Carshalton Public Hall Company (Limited) was formed early in the present year, for the purpose of erecting a public hall suitable to the requirements of the neighbourhood. The share capital was 2,500*l.*, of 1*l.* each. Upwards of 1,660 were applied for previously to the company being formed. A suitable piece of land near the Fox and Hounds, in the main road leading from Croydon, Beddington, and Wallington to Carshalton, was secured as a site, plans and tenders obtained, and the work commenced with expedition. On the 17th of June last, the foundation-stone was laid by Sir Henry William Peek, bart., M.P., and the work has steadily gone on since then. The building, as now completed, is in the Gothic style, built with red bricks and stone dressings, and has a very pretty and charming appearance as seen from the road. The platform is 11 ft. by 39 ft., and over it is a handsome clock, presented by Sir H. W. Peek. The furniture of the hall and committee-rooms have been supplied by Messrs. Shoolbred & Co., of Tottenham-court-road. The architect was Mr. J. D. Hayton; the builder, Mr. Charles Coles, of Croydon.

METROPOLITAN TRAMWAY WAITING-ROOMS.

SIR,—It has at times been a matter of wonder and surprise to me, in passing through the London street thoroughfares, that so little comfort is provided for persons using the tramway cars in various districts, insomuch that it is only here and there that a room is to be found for them to remain in whilst waiting for the cars they may require. At this inclement season,—indeed at any time when the weather is unpropitious,—it is very unpleasant for passengers to have to wait standing in the open street, who may be travelling by the tramway lines, and be at the same time exposed to every kind of temperature. I write thus to express my own views on this point, and to suggest that tramway waiting-rooms be put up at the starting-points of the cars in and about London, where they do not exist at present, by their proprietors, and which, if done, would confer a considerable amount of comfort which now is denied to many.

A RESIDENT IN SOUTH LONDON.

THE CHIMES.

SIR,—The end of the year is approaching, let us take stock and review; with progressive utility we started, has our work been useful and true? Some failures we all must expect, all cannot do what they would: it's cheering for one to reflect at the year's parting, to say I have done what I could. We know what last year has brought us, we know not what the next one will bring; we repine not at parting, but smile when the merry bells ring, for they say—work on, sail on, onwards, work while you can, you all may not live while I reign—life is but a span. Strive to be good and useful, alleviate needless pain, if ye are missing at next ringing, the tune will be, he lived not in vain. *Builder* readers, hard-fisted pleaders, a goodly Christmas cheer; hand over hand, to avoid all shoals and sands in the forthcoming year; salutes and *salam*, Mr. Editor, I wish you a happy new year.—R. T.

NEW SHOREHAM CHURCH RESTORATION (?).

SIR,—With thanks for quoting my protest on this matter, and for your kind remarks and correction thereon, allow me to say that it was entirely because I knew that the Sussex Archæological Society was *non est inventus*, or in such a state of somnolence as to be dead to the heaviest prog in the side possible to give it, that I deemed it useless to point to them as the "real delinquent." For several years past their chief aim seemed to be in the background, while the picking out of some old mansion, and excursion thereto, for some one to read a paper full of *conjecture* only, and winding up with a good *luncheon*, always was to the fore. But as for being *guardians* over our ancient structures, such a notion exists only in imagination. Therefore I deemed it right to try and wake up the Institute of British Architects, who seemed to have done nothing worth notice for the benefit of architecture, ancient or modern, or for its professing body.

ARTHUR LOADER.

WHEEL-TIRES AND THE WEATHER.

SIR,—There appears to be no doubt that the late dreadful accident on the Great Western Railway was caused by the breaking of a wheel-tire of a carriage which had been added to the train at Oxford; where, it is stated, this carriage had been set aside to be repaired. If such was the case, it might be well to know whether the carriage had been fully exposed to the previous extreme cold, as from such an exposure, for many hours, wheel-tires must contract to the utmost degree, and thus, when in its most brittle state, oppose a more than usual resistance to the expansive effects of the heat generated by the friction of the wheel when in motion. A thorough investigation on this subject might give a fearful warning for the future, and show the propriety of railway carriages being protected from such exposure when not actually in use during such severe weather.

Experienced sportsmen keep their guns in moderately warm places, and when in the field, in severe frosty weather, protect the lock as far as possible from the cold, as at such times the hammer is apt to snap off when the gun is discharged.

G. A. ROWELL.

"GATE" AND "STREET."

SIR,—Several north-country towns afford a suggestion to our civic authorities for improvement in the nomenclature of some of our city thoroughfares. The old English "gate," signifying a "road" or "way," is retained in Bradford, as Westgate, Ivegate, Kirkgate; in Leeds, as Briggate, &c. If, in like manner, Aldersgate, Bishopsgate, Moorgate, and Newgate, were so called without the useless affix "street," it would be an extensive advantage without a corresponding loss.

Though, in London, the streets were so named because they led to the gates in the City wall, yet since neither the wall nor the gates exist, no ambiguity (except, perhaps, in "Newgate") could occur in adopting the old English meaning.

CARLO F. JOHNSON.

WHITEWASH AND BRICKWORK.

SIR,—Will any of your readers tell me of a quick process for getting whitewash off brick walls that has for several years been put on, without washing off, in the following manner:—A coat of limewhite and a coat of distemper on the top of it, the former, I suppose, being put on to bind the distemper down, instead of washing off properly. I have a large quantity to get off down to the brickwork, and think there may be some quicker way than chipping.

BUILDER.

Books Received.

Sketches and Studies, Descriptive and Historical. By R. J. KING, B.A. London: J. Murray.

MR. KING (who is the author of "Murray's Handbook to the Cathedrals of England and Wales") has in this volume collected (as it is now so much the fashion to do) essays written in various periodicals,—"Oxford Essays," the *Quarterly Review*, and *Fraser's Magazine*. Essays on such subjects as "Sacred Trees and Flowers," and "The Dogs of Folk-lore," are pretty sure to find interested readers at present, when there is such a run upon national legends and traditions. We should be rather glad to have done with the very expression "folk-lore" for the present: the way it has been worked in periodical literature lately is something alarming. Sacred trees and flowers, however, is a subject of much interest, from the beautiful and fanciful associations it brings us into connexion with. It is strange to see how largely the Mediæval Church linked the flowers of the field with the mysteries of religion; how "the wall-flower that 'scents the dewy air' about the ruined arches of its convent; the scarlet anemone, that flowers about Eastertide, and is called 'the blooddrops of Christ'; the blossoming almond-tree, one of the symbols of the Virgin; and the marygold, that received her name, are but a few of the old friends brought long ago from Syria by some pilgrim monk, and spread from his garden over the whole of Europe"; to think of the holy exultation over the discovery of the "Passion-flower" in the New World,—"the flower in which the Creator of the world had chosen to represent the principal emblems of His Son's Passion"; and so on. Truly men seem at all times to have seen in Nature whatever they looked for in it. "The Great Shrines of England" is a comparatively recent *Quarterly Review* article (1872), and gives a sketch of the great centres of devotion in England as they would have appeared in order and importance to the pious pilgrim of the days when these shrines were at the height of their renown. An interesting article on "Travelling in England" (*Quarterly*, 1864), commences by introducing us to the "very pleasant mode of travelling" in vogue with Sir Hildebrand Jacob (author, in the early part of last century, of some forgotten plays and poems), who, when the spring was somewhat advanced, and the roads became passable,—

"Set off with a portmanteau, attended by one servant, without knowing whither they were going. Towards evening, when they came to a village, they inquired if the great man loved books, and had a good library; and if the answer was in the affirmative, Sir Hildebrand sent his compliments, that he was come to see him; and there he used to stay till he was disposed to move further. In this manner he travelled through the greatest part of England, scarcely ever sleeping at an inn, unless when town or village did not afford one person civilised enough to be glad to see a gentleman and a scholar."

In these days, alas! we have fallen into very uncivilised ways. Have we any modern system of travelling so agreeable and comfortable as that of worthy Sir Hildebrand? And yet we know several "great men" of their town or village who would warmly welcome a gentleman and a scholar if they could be certain of catching him. Other portions of the essay touch in an entertaining manner, and a fairly picturesque style, upon some of the architectural monuments of England visited by the author; and a separate short essay is devoted to "St. David's." Among "sketches and studies from Belgium," will be found an interesting account of a visit to the châteaux of Rubens and Teniers, written in full sympathy with the genius of the artists whose former abodes thus become "shrines" for a modern pilgrim. The house once occupied by Teniers is at Dry-toren, near Steen, which is Rubens's "seat"; but the author observes that Teniers's name is unknown in his former neighbourhood,

though the fame of Rubens is still green at Steen. Of the "three towers" (Dry-toren) of Teniers, only one remains. "This is the gate-tower, of rough timber, high and square, with a broken-backed steep roof, and ornamented weather boards—a form constantly recurring in Teniers's pictures." The good farmer's wife to whom the place belonged was much astonished at the invasion of her pigeon-house (once the *atelier* of the artist); "but perhaps Mynheers were fond of pigeons, and had climbed up to see them. Not the pigeons? Ah, yes; she *had* heard that some one used formerly to paint in the tower. Was it either of the Mynheers themselves?" Such is the reputation of David Teniers at Dry-toren.

We can recommend Mr. King's essays, both for matter and style, to the "literary leisure" of our readers.

VARIORUM.

AT this season of the year, when a large proportion of our London population are leaving Town on visits to pleasant country quarters, we would appeal," says the *Lancet*, to the railway companies, and request them to endeavour to make their stations somewhat less inclement, and free from draught. We recognise the difficulty of effecting this with respect to the outside approaches and the platforms; but surely something might be done to improve the condition of the interior. The booking-offices, for instance, are invariably placed directly in the current of a thorough draught, in which the unhappy traveller has to stand at the end of a long *queue* whilst the tickets are being doled out at the little pigeon-hole of a window. Again, the spacious waiting-rooms, except in the immediate neighbourhood of the fireplace, are deadly cold, and resemble some vast cave, in which the imprisoned winds are for ever contending. When the swing-door opens, *qua porta data ruunt*, fresh blasts enter and add to the general shiver. It would cost but little to equalise the temperature in these Æolian halls by introducing hot-water pipes, in addition to the existing fire; and if some kind of screen were placed round the booking-office, to shield us from the keen blast, whilst waiting our turn to receive tickets, we should be highly gratified. Many a severe cold has been contracted at the railway-station, and at this holiday-time it is particularly annoying to be laid up just when we wish to feel our best and brightest.——The *Pictorial World* says that actually "the only manufactory of wooden skewers in the world is supposed to exist at Toledo, Ohio, whence millions of them are shipped to England. They are made by machinery from hickory blocks; between 80,000 and 90,000 are turned out every day.——The *Engineer* is speaking of the certain advantage that would be gained if the direct access of air from within a room to an open fire were prevented. "This might be effected by interposing a plate of talc,—easily removable, and large enough to cover the whole throat, grate, and ashpit,—between the stove and the room. The air for the supply of the fire would be drawn from outside. Ventilation would be effected by a valve near the ceiling in the chimney, nearly all the advantages of an open fire would be retained, the heat would radiate freely through the talc with little loss, while the flying of dust and smoky chimneys would no longer plague us. The whole device would be perfectly simple, the talc being set in a frame which could be removed in a moment when the fire needed more fuel. These talc plates have already been tried on a moderate scale, with excellent results, in some of our public buildings. It might be worth while to try them in our dwelling-houses. Difficulties may, however, stand in the way, which are worth notice, namely, the trouble of getting talc in sufficiently large plates, and its cost. By the rearrangement of our grates, then, and the provision of suitable reflecting surfaces, it appears to be possible, without very much complication or expense, considerably to improve the modern open fire, by utilising that portion of the heat which is radiant far more effectually than it is now utilised."——The *Leisure Hour* makes some pertinent remarks on Trade Packages:—"A vast amount of labour and skill is demanded and brought into action for the sole purpose of packing up goods. Here is the carpenter and joiner, the cabinet-maker, the gilder, the paper-maker, the paper-box maker, the printer, the chromotypist, the artist and designer, the glass-blower, the glazier, the potter, the worker in metals, the paper-bag maker (and many more industries might be mentioned), all employed regularly and constantly in the sole manufacture of trade envelopes of some kind or other, and affording employment to tens of thousands of hands in different parts of the kingdom. Then look at the fact that the entire production of this large army of workers is ultimately given away, so to speak, inasmuch as no charge is made for it to the individual consumer. We do not say that the whole of it is finally wasted, because many of the more artistic articles are carefully preserved, and being well worth preserving, often form the ornaments of our drawing-room tables. In a certain case in the Courts it was once argued that the defendant must be mad because he had thrown away his physic; the judge, who did not think much of physic, dissented, but agreed upon its being stated by counsel that the man had also thrown away the bottles and gallipots. Certainly none but a madman would throw away some of the exquisite productions in that department of industry of which we have been treating. The vastness of our internal commerce is a matter hardly conceivable by the mind, but some idea of it may be gathered from the extent of the manufacture of the mere vehicles and wrappers of retail goods."——"The City Diary," which is published at the office of the *City Press*, contains complete lists of the members of the Corporation and of its officials, with the names and addresses of the City clergy and ministers of various denominations, the ward clerks, tax-collectors, parish officers, ward clubs, and other City associations, with much information respecting the livery companies, the public business of the City, and other matters in which citizens generally are interested.

Miscellanea.

Value of the Grimsby Docks.—During the sitting of the Railway Commission upon the case of the Manchester, Sheffield, and Lincolnshire Railway *v.* The Caistor Union, in which the company are appealing against the high rating of their property, some interesting facts have been brought out in the evidence in reference to the Grimsby Docks. Mr. H. D. Martin, civil engineer, stated that he had had a great deal of experience in the construction of railways, and in making a calculation of the cost of maintaining the Manchester, Sheffield, and Lincolnshire Railway, found that 5·98d. was the cost per train per mile. This included the maintenance of stations and Grimsby Docks. In his opinion the structural value of the docks was 906,000*l.*, their rateable value 45,300*l.* He valued the Royal Dock at 500,000*l.* Mr. C. Lee, architect and surveyor of forty-five years' standing, considered the structural value of the docks to be 945,000*l.*, which he afterwards reduced to 890,000*l.* Sir E. Watkin, chairman of the Manchester, Sheffield, and Lincolnshire Railway, deposed that the expenditure on the docks had been 1,250,000*l.* The working expenses, he considered, swallowed up the whole of the returns. They were intending to spend 70,000*l.* more in connecting the Old Dock with the Victoria Dock, but did intend to enlarge them further.

The New Fever Hospital, Darlington.—The Mayor (Mr. H. F. Pease) formally opened this new hospital for infectious diseases on the 17th ult. The erection was begun two years ago by the Corporation of Darlington. The cost is about 9,225*l.*, of which amount 3,000*l.* have been raised by public subscription, while other 2,400*l.* have been realised from the sale of the old Darlington Union Workhouse, thus leaving a sum of nearly 4,000*l.* to be made up by the corporation. The hospital occupies a little over two acres of land, and consists of three chief wards, capable of accommodating 44 patients, and providing each with about 144 superficial feet of area, or 2,000 cubic feet of air. The number of wards can be doubled at any future time, and in the event of an epidemic breaking out, light and temporary wards could at once be constructed by the side of the present institution. There are four separate buildings, of two stories in height, connected by a spacious corridor. The hospital is built of brick, with stone facings. The architect was Mr. G. G. Hoskins, of Darlington. The contractors were:—For bricklaying and masons' work, Messrs. M. Watson & Son; for carpenter and joiner's work, Mr. Thos. Smith; for slaters' work, Messrs. J. Atkinson & Son; and for plumbers' work, &c., Messrs. Russell & Sons.

Refreshments at Sales.—In order to propitiate buyers, vendors occasionally provide a liberal supply of "refreshments." The refreshments not unfrequently consist of drink. It would seem from the evidence given at an inquest held at Blackpool on Saturday that it is advisable some restraint should be exercised on such occasions. A sale of property took place at Great Marton, and was attended, among others, by a farmer and a labourer named Sanderson and Cartmell. Before the sale commenced, bottles of gin, rum, whisky, port, and sherry were placed upon the table, and everybody had the privilege of helping himself as often as he chose. Sanderson and Cartmell drank themselves to death. The weather was cold, and the two foolish fellows probably fancied they were keeping up the natural heat by imbibing a mixture of spirits. Whatever their motive, however, they drank till they became unconscious, and while under the influence of the liquor they died. The jury returned a verdict "That the deceased died from congestion of the brain, produced by an excessive use of ardent spirits, aggravated by exposure to cold." They also added a rider, censuring the practice of supplying an unlimited quantity of intoxicating liquors at sales of property.

The General Union of Carpenters and Joiners.—The committee of the General Union of Carpenters and Joiners of Great Britain, Ireland, and the United States have presented the forty-seventh annual report to the members. The committee state that they have now the largest number of members and the greatest amount of accumulated funds that this society has ever possessed since its first establishment as a trade union in the year 1827. Notwithstanding that 689 members had been expelled from the union, it now numbers 141 lodges, representing in the aggregate 9,701 members, against last year's total strength of 140 lodges, representing 9,295 members. The entire expenditure from all sources reached the sum of 11,507*l.* 19*s.* 8½*d.*, or rather less than 1*l.* 3*s.* 8½*d.* a head when apportioned to each member; the largest amount of this outlay was entailed in the relief of members out of employment, sick and superannuation allowance, replacing lost tools, compensation for being disabled by accidents, strikes, the allowance granted for the interment of deceased members and members' wives, together with the outlay incurred to meet the general working expenses of the Executive Council and of the different lodges. The total amount expended in strikes has been 991*l.* 1*s.* 5½*d.*

Exhibition of Wedgwood Art Pottery in Birmingham.—A fine collection of Wedgwood art pottery is now on view at No. 6, Burlington-chambers, New-street. The name of Wedgwood, as is well known, has been connected with the art of pottery for more than a century, first at Burslem, and subsequently at Etruria. The manufactory at the latter place was opened in 1769, by Josiah Wedgwood, and the same family still carry on the works, under the title of Josiah Wedgwood & Sons. The present exhibition is a collection of the modern works of ornamental pottery produced by the firm at Etruria. Messrs. Wedgwood some time ago engaged the artist Lessore, who is known in connexion with the Imperial manufactory at Sèvres, and the result is seen in this exhibition in wall-plaques, circular, square, and oval, in plates for the cabinet, jardinières, dishes, tazzi, inkstands, and services for the table. The decorations are in each case original in character, and some of the plaques are in reality exceedingly fine pictures. In addition to Lessore's works, there are some painted by W. Crane, A. Bean, Miss Thompson, and Brownswood.

The New Public Hall, Stafford.—The Estate and Public Hall Committee's report, at the meeting of the Town Council on the 21st ult., showed that the tender of Messrs. Hayes, of Newnham and Birmingham, had been reduced to 7,150*l.*, and they now recommended the council to accept such tender. The highest tender was 12,000*l.* Mr. Cox entirely disagreed with the expenditure of this money in the erection of a hall on the site adopted. On such a site they could not erect a building in any way commensurate with the requirements of the town, and it would be a continual source of expense to the borough. There would be no suitable rooms for the offices of the council, or for any public body—nothing but a large hall, with a few ante-rooms and shops. After some discussion, fourteen voted for the adoption of the report and four against it.

Industrial Dwellings in Carlisle.—On Wednesday, the 23rd ult., a meeting was held in the Town-hall, Carlisle, "for the purpose of taking steps to secure proper house accommodation for the industrial classes in this city." The meeting had been convened by the mayor in accordance with a resolution of the Industrial Dwellings Committee of the Town Council, and the attendance of gentlemen who took part in the sanitary inspection had been invited. The mayor presided. After considerable discussion the Bishop of Carlisle moved the following resolution:—"That in consideration of the great powers bestowed upon the corporation by Parliament, and the present condition of many of the houses now inhabited by the poorer classes of the population of Carlisle, this meeting urgently appeals to the corporation to put their powers in force, both as regards the demolition of dwellings unfit for human habitation and as regards the erection of dwellings more suitable," which, with the addition of the words, "and the improvement of such as admit of improvement," was carried.

The New Reredos at Trinity Church, Margate.—On Tuesday, the 22nd ult., was unveiled the new reredos at Trinity Church. It extends the width of the large east window, there being space on each side, however, for the Commandments, which are being put up. The back of the reredos is of Caen stone, inlaid with coloured alabaster. In front are four shields containing emblems of the four evangelists, Matthew, Mark, Luke, and John. The centre shield has a background of green Irish marble, overlaid with a transparent alabaster Maltese cross, jewelled round with crimson alabaster bosses. The shield is illuminated. The pinnacles of the reredos are crocketed to match the architecture of the building, especially that portion in front of the organ-gallery, and finished with finials of the same character. The reredos alone, we hear, will cost between 300*l.* and 400*l.*, and is presented by a gentleman whose name is not to be disclosed. The architect of the work is Mr. Blackburn, of London; and the statuary, Mr. Forsyth.

Landlord and Tenant Law.—The lessee of a house in London had allowed her rent to fall into arrears, and the landlord, apparently finding nothing to distrain upon, was anxious to regain possession. Very commonly a clause is inserted in leases dispensing with what is called a formal demand of rent, but in this case the expediency of having such a proviso had been overlooked. Before, therefore, an action of ejectment could be entered it was necessary that the landlord should go through the rather intricate form against which he had neglected to protect himself. The exact sum, it appears, must be demanded on the premises at a convenient time *before sunset* on the last day on which it may be paid, and if it be not then paid the landlord may recover possession. This little-known requirement of the law was in this instance solemnly acted upon, and the landlord at once obtained a verdict. "We have now," said the judge (Mr. Justice Keating), "had an opportunity of seeing how a demand of rent at common law is made. This is the first time I have ever known it proved."

Water for London.—A special meeting of the proprietors of the Chelsea Company have passed resolutions to the following effect:—That the directors be authorised to take such steps as, in their judgment, may be necessary or expedient to obtain a fresh intake, with reservoirs and other works connected therewith, and lay the necessary main pipes from the site of such proposed intake to the works at Seething Wells, with the least possible delay. That the measures taken by the directors to secure the land necessary for the construction of impounding reservoirs be approved and adopted, and that they be empowered to appropriate temporarily such part of the company's "contingency fund" as may be necessary for the purpose of such land, until Parliamentary powers can be obtained for the proposed extensions. That the directors be authorised to apply to Parliament in the ensuing session for the necessary powers. The land, comprising an area of about thirty acres, necessary for the construction of the impounding reservoirs, has been obtained near Molesey.

Fees in Stamps.—The Lords Commissioners of her Majesty's Treasury have given notice that on and after January 1st, 1875, the fees payable in the police-courts of London, Chatham, and Sheerness, shall be collected by means of stamps.

Proposed West-End Theatre for Edinburgh.—The present edifice not being sufficient for the community as now existing, a number of gentlemen have combined to promote the erection of a West-End Theatre worthy of Edinburgh in respect of its appointments, and conveniently situated for the growing population of the western and southern districts. As a first step, the vacant stance in the centre of Castle-terrace has been fixed upon as the most eligible site. The ground in question measures 300 ft. in length by 150 ft. in width, and thus affords space for a theatre capable of accommodating 3,000 persons besides other public purposes. The site is accessible to the whole West End, and is in immediate communication with Princes-street and Lothian-road, and the main routes of traffic to all parts of the city and suburbs. It is proposed to erect in connexion with the new theatre a winter-garden, which might embrace an aquarium, and might be used for horticultural and other exhibitions, as also a music-hall, available for concerts or similar entertainments.

Ecclesiastical Buildings and Restorations.—It appears from information supplied to the Bishop by the Rural Deans of the diocese of Hereford, in compliance with the address presented to her Majesty by the House of Lords, dated the 22nd of June last, that there has been expended in the diocese of Hereford, in the building and restoration of churches (at a cost exceeding 500*l.*), since the year 1840, from funds derived from all sources (public and private), the sum of 437,338*l.*, viz., the cathedral, 48,591*l.*; Archdeaconry of Hereford, 208,378*l.*; Archdeaconry of Salop, 179,610*l.*, to which latter amount has to be added the church of Snead, 759*l.*, which has been accidentally omitted, making the total as above. The probability is said to be that, by the returns from the other dioceses, the grand total will be upwards of 30,000,000*l.* as the amount expended in church building and restoration, in thirty-three years, in England and Wales.

Reconstruction of the Liverpool Landing-stage.—The reconstruction of the Liverpool Landing-stage is likely to be delayed through a dispute having occurred between the riveters, platers, and others employed on the stage and the Messrs. Brassey & Co. The cause of the dispute is the amount of work that should be executed by the workmen. The employers insist upon as much work being performed in the short days of winter as they have had done in the long summer days. A week in summer means fifty-four hours, while a week in winter amounts to only forty-two hours and a half; therefore the men desire that the amount of work should be reduced in proportion to the hours. To this the employers object. Some of the men have left, and the struggle is likely to be a protracted one.

Works Prevented by the Metropolitan Board of Works.—The following applications were last week refused:—That of Messrs. Bateman & Corser, for the consent of the Board to the construction, &c., of a footbridge over the public thoroughfare known as Whetstone-park, Lincoln's-inn-fields, to connect the fifth or upper floor of the Inns of Court Hotel with a building opposite; that of Messrs. H. M. & W. Grellier, for approval by the Board of an advanced line of frontage for a warehouse to be erected at the corner of Harad's-place, Wellclose-square; and that of Mr. J. Wood, for the consent of the Board to the formation of a paved street, 20 ft. wide, to lead out of Back-lane, Brixton, and for the widening of that lane in connexion therewith.

Reorganisation of the India Museum and Library.—This is being vigorously proceeded with. The museum has hitherto occupied but a limited space in the India House. The valuable collections, so long hidden away in obscurity, are now being moved to the galleries at South Kensington. These galleries have been temporarily leased, in order that the curiosities may be brought into systematic arrangement before they are placed in the site selected for their reception in the new Museum and Institute in Charles-street, Whitehall. The new building will be in the shape of an irregular quadrangle, and will include a lecture-hall.

Old Masters at the Royal Academy.—The private view will take place on this, Saturday, and the Exhibition, which includes works of deceased British Artists, will be open to the public on Monday.

Election of Surveyor for Hythe.—Mr. Lancefield, assistant-surveyor under his brother, the town surveyor of Winchester, attended the sanitary authority, and answered questions put to him. Mr. Hogben, of Deal, also attended. After the two candidates had retired, the election of Mr. Lancefield was carried unanimously. He was then called in and informed of the fact. Mr. Hogben was also informed of the result, and the mayor highly complimented him on his testimonials, telling him the council thought very highly of his qualifications, and had they contemplated carrying out any large building work they would very probably have selected him in preference to Mr. Lancefield.

Patent Stone Working and Tunnelling Machinery Company.—We see by an announcement in our advertising columns that the works and business of this company are to be sold. We have ourselves inspected the patent machinery the company was originally formed to work and reported upon it, and the works at Nine Elms must be known to many of our readers. Owing to exceptional circumstances, which we are told can be satisfactorily explained, a liquidation has been found necessary; but we should be very sorry to see prematurely closed a concern like this, which seems to meet a want, and ought in the right hands to prove a success.

Working Men's College, Blackfriars-road.—The eighth year of the college begins on Monday, when all the classes and night schools will re-open. There are new classes in drawing, mathematics, history, English literature, and physical science. The night schools meet every Monday, Wednesday, and Friday; the drawing classes every Tuesday and Thursday under Mr. Miller; the French and German classes every Thursday under Mr. Oswald. A series of very elementary lessons in physical science will be given, with experimental illustrations, on Thursday evenings, by Mr. Rossiter, the secretary of the college, from whom any desired information can be had.

The Cupola of St. Peter's.—The *Diritto* says the Pope has taken up a project which he formed many years ago of placing twelve statues round the cupola of St. Peter's, in accordance with the idea of Michelangelo. Twelve sculptors are to be charged each with the execution of a statue, but they are not to be chosen by public competition; nor will any artist be eligible for the work who was not domiciled in Rome prior to 1870, or who has manifested any opposition to the cause of Holy Church.

Exhibition of Appliances for the Economy of Labour, 1875.—The Council of the Society for the Promotion of Scientific Industry, the head-quarters of which are at Manchester, has decided to give gold, silver, and bronze medals for excellence and novelty in the various classes of exhibits at the Exhibition of Implements, Machines, and Appliances for the Economising of Labour, which is to take place in Manchester in 1875. The arrangements for the Exhibition are progressing satisfactorily, and space has been secured by many high-class engineering and other firms.

Metropolitan Fire Prevention.—At the meeting of the Metropolitan Board of Works on the 23rd ult., in the course of a discussion upon the report of the Fire Brigade Committee, it was recommended that there should be a main water-pipe in every street, with high pressure, and that the firemen should have means of turning the water on independently of the officials of the water companies. A suggestion was also made that the fire-escapes should not be kept locked up during the day.

Not Too Soon.—The Society of Apothecaries contemplates the institution of an examination in the science of public health. Opportunity will thus be afforded to medical practitioners seeking local appointments as officers of health of producing to electing sanitary officers' authorities evidence more valid than that of so-called testimonials of their fitness to hold such offices. The society is to be praised for being the first of the medical corporations to move in this useful manner.

Narrow Escape of a Royal Villa.—The King of Italy's villa Malatesta, just outside the Porta Pia, Rome, was nearly being destroyed by fire a few days ago. A spark fell by some means unknown upon the carpet of an unoccupied room, and after smouldering, probably for a time, broke into a flame, and the furniture was soon attacked.

Fencing Stoke Newington Green. — A letter was read at the meeting of the Metropolitan Board of Works, last week, from the Islington vestry accepting the conditions on which the Board were prepared to contribute one-half of the purchase-money for the rights of the lord of the manor in Stoke Newington Green, and a cheque for the amount was ordered to be drawn, and the Parks and Open Spaces Committee instructed to commence the work of fencing.

Fall of a Roof at Sunderland.—On Tuesday, the 22nd ult., the roof of a house in Zion-street, Hendon, Sunderland, fell into the kitchen cutting off the escape of Mr. and Mrs. Dobson, the occupiers, who were in a bedroom that had been added to the main building. The upper portion of the house had been untenable for some time, through a defective roof. The unfortunate occupants were rescued from their uncomfortable position by their neighbours, who cleared the *débris* away.

New Club for Stockton.—Mr. T. Devereux, of Stockton, is building a club to cost 2,000*l*. Within the building, room will be provided for six billiard-tables, and there will be general club accommodation such as has been long required in Stockton. There will also be reading, dining, and retiring rooms. Messrs. Moses & Weatherill are the architects. The contract has been let to Mr. Smirke, of Norton, for 1,463*l*. The site of the building is in the yard of the White Hart Hotel.

Liverpool Water Supply.—Messrs. Hawksley and Bateman have reported on the proposed new water supply for Liverpool. Mr. Hawksley recommends the valley of the River Wyre, near Bleasdale, as the best source of supply; while Mr. Bateman advises the corporation to go to the Lake of Ulleswater and Haweswater, in which latter project he thinks that Liverpool and Manchester might combine for the procuring of a practically unlimited supply of good water for both towns.

School Competition, Wallingford. — Mr. S. R. Stevenson, of Nottingham, is the successful competitor for designs for the Grammar Schools at Wallingford, Berks. Three sets were selected by the governors of the school out of twenty-three which were sent in for competition, many of which were from London firms. The governors, however, decided to submit the choice to Mr. Hawkins, the consulting architect of the Education Department, who gave the award to Mr. Stevenson.

The Labour Laws.—The *Liverpool Albion*, in view of the approaching Trade-Union Congress, to be held in Liverpool, offers two prizes, one of 15*l*. and the other of 5*l*., for the two best essays on Trade-Unionism and the Labour Laws of this Country, including the Master and Servant Act, the Criminal Law Amendment (Violence, Threats, &c.) Act, the Friendly Societies Act, and other measures affecting the relations of employers and workmen.

Bridge Surveyor for the North Riding.—We understand that the candidates for this office were ninety in number. The committee appointed to examine the testimonials selected several of these to meet them a few days ago, and they recommend the following four gentlemen, from whom a selection shall be made by the Court of Quarter Sessions, viz., Mr. Walker Stead, Mr. John Blount, Mr. C. E. Dawson, and Mr. John Keith.

Fire at St. Stephen's Church, Hull.—Shortly after one o'clock on Monday, smoke was observed issuing from the tower of St. Stephen's Church. On the Rev. J. Deck going to the place he found that a chimney was on fire in the bell-chamber, where some workmen had been at work hanging the bells. With their assistance the fire was speedily extinguished, no material damage having been done.

Additional Prison Cells required for Birmingham.—At a meeting of the Birmingham town council, on the 22nd ult., on the recommendation of the Estates and Buildings Committee, it was resolved to enter into a contract with the county justices for the renting of twenty-five additional cells in the county gaol.

Improvements at St. Michael's Mount.—The improvements here are being carried out under the direction of Mr. Piers St. Aubyn, for Sir John St. Aubyn, M.P. These are now fully started, and the first section will be completed about the middle of 1876, at a cost of several thousand pounds.

A New Bridge over the River Hull.—A costly bridge, erected by the Hull Board of Health, and connecting the east and west parts of the town at a point considerably north of the present north and south bridges, is completed, and the mayor (Alderman Wells) will probably open it on Saturday, January 9th.

The Main Drainage of Dublin. — The Dublin corporation has resolved to ask the Government for a loan of half a million, to carry out main drainage works, the loan to be repaid out of the contributions by Government to local taxation.

Kelvin Grove Museum, Glasgow.—The foundation-stone of an important addition to this museum was laid on Saturday, the 19th ult., by Lord Provost Bain, in presence of the magistrates and council and a number of subscribers.

Destruction of a Church by Fire.—Bramham Church, near Leeds, has been partially destroyed by a fire, caused by the heating apparatus. The lower end was totally destroyed, and the bells fell during the conflagration.

The Mansion House. — The loggias and vestibule of the Mansion House have just been newly decorated by Messrs. Gillow & Co., under the direction of the City architect.

The Memorial Church, Cawnpore.—The windows of this church are now being made by Messrs. Cox & Sons, of Southampton-street, Strand.

TENDERS

For additional wing to Elm Lodge, Buckingham, Shoreham. Mr. Arthur Loader, architect:—

Berstow (accepted)	£326 0 0

For additions to the printing-offices *Brighton Daily News*, North-street, Brighton. Mr. Arthur Loader, architect:—

Parsons	£243 0 0
Newnham	227 0 0
Patching & Webber	222 0 0
Bruton	190 0 0

For further extension of Messrs. Spalding & Co.'s paper-mills, Farningham-road, Kent. Messrs. Spalding & Knight, architects:—

Downs & Co. (accepted).

For additional block of warehouses, Great Guildford-street, Southwark, for Mr. J. Kitchin. Mr. A. Fraser, architect:—

Downs & Co. (accepted).

For building tower to church at Farnham Royal, Bucks:—

Macey	£2,140 0 0
Bell & Son	2,030 0 0
Dove, Brothers	2,000 0 0
Sabey & Son	1,874 0 0
High	1,714 0 0

For party-wall to back premises, 66 and 67, Houndsditch. Mr. Wm. C. Banks, architect:—

Larke	£198 0 0
Merritt & Ashby	195 10 0
Staines & Son (accepted)	157 0 0

For the erection of a new building on the site of Nos. 91 and 92, Great Russell-street, and No. 1, Charlotte-street, Bloomsbury, for Mr. H. D. Clark. Mr. John Wimble, architect. Quantities supplied:—

		Additional Stairs and W.Cs.
Browne & Robinson	£6,069 0 0	£170 0 0
Killby	5,919 0 0	134 0 0
Brass	5,847 0 0	165 0 0
Newman & Mann	5,702 0 0	156 0 0
Falkner	5,612 0 0	125 0 0
Croaker	5,523 0 0	150 0 0
Scrivener & White	5,409 0 0	154 0 0
Lawrence	5,382 0 0	136 0 0

For five villas at Willesden:—

Vears & Co.	£4,090 0 0
Pink	3,575 0 0
Guest	3,805 0 0
Hook & Oldey	3,810 6 0

TO CORRESPONDENTS.

Condition of Great Grimsby (unavoidably postponed).—Dr. L. M.—J. G. & Son.—C. S.—R. W.—Observer.—F. P.—J. M. G.—S. L.—R. P. S.—J. S.—Thomason College.—C. L. E.—S. & S.—W.—W. C. B.—Bronze (a plan should be obtained from a competent person at starting. Look through the book published by the Society for Improving the Condition of the Working Classes, Exeter Hall).—Information, &c. (in type).—N. W. (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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